FINAL REPORT OF THE ERIC PROJECT ON

"BEHAVIORAL ANALYSIS AND MODIFICATION OF PARENT TRAINING TECHNIQUES INVOLVED IN IMPROVING STUDY AND HOME WORK BEHAVIORS OF THEIR ACADEMICALLY BACKWARD CHILDREN".

PROFESSOR SANDHYA SINGH KAUSHIK
PRINCIPAL INVESTIGATOR

FUNDED BY THE
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH
AND TRAINING

SRI AUROBINDO MARG, NEW DELHI -110016

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DEDICATED TO

MY BELOVED HUSBAND

LATE SHREE T D SINGH

(1946-1992)

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Chapter I

Introduction

“It is perhaps natural that psychologists should awaken only slowly to the possibility that behavioral processes may be directly observed, or that they should only gradually put the older statistical and theoretical techniques in their proper perspective. But it is time to insist that science does not progress by carefully designed steps called “experiments” each of which has a well -defined beginning and end. Science is a continuous and often a disorderly and accidental process. What the statistician means by the design of experiments is a design which yields the kind of data to which his techniques are applicable.”

_ B.F. Skinner, A case history
in Scientific Method , cumulative
Record : 3rd ed. New York:
Appleton- Century -Crofts, 1972,
P. 122.

The Present Work

The present work aimed to do behaviour modification of academically backward children through parents. This naturally involved parental training and various parental training techniques in teaching the parents behaviour modification skills. There exists several parental training techniques. They had to be experimentally analyzed one at a time.

There are definite experimental designs uniquely befitting for doing experimental analysis of variables. These designs are different from "two-and-multi-group outcome type" experimental designs. The experimental design relevant to the present study was the 'multiple-baseline design' which permits enough flexibility in the fabric of the design to try out various variables even while the experiment is on-going and until the target is not achieved. These newer designs aim at experimental control on the dependent variable rather than statistical control, thereby demonstrating the functional relation between the experimental variable and the dependent variable.

The Need For the Present Work

The need for the present work arose from two considerations : the practical and the conceptual.

There are no institutions or schools for the training of backward children on the campus of Banaras Hindu University. Children are brought to the 'Child Guidance Clinic', S.S.Hospital, B.H.U. and the parents are merely verbally told what to do.

After it was resolved that the work had to be done in the area of parental training. A search of literature revealed that whereas behaviour modification was being used in the developed countries with particularly fruitful results in the area of training of the academically backward children, the research literature in India involving the academically backward childrens' training was either full of theoretical articles or was dominated by 1Q and other kinds of "mental testing" efforts without providing direct benefit to the Schools/Institutions. Letters were written to the various important mental health and parent-/child training institutions in India and the information gathered was that in the name of "parental counselling", only general and vague didactic/verbal lecture was being given to the parents of academically backward children without any attempt to systematically evaluate the impact of such a type of (verbal)

"parental counselling" on the management skills of the parents, and in turn, behaviour changes in the academically backward children.

On the other hand, review of international literature on parent/child therapy and behaviour modification proved to be very encouraging. In fact, lately, like other trends in operant approach such as 'Experimental Communes' for treating drug addiction and for serving the emotionally disturbed and handicapped, one of the recent trends or movements in the world of behaviour modification is : training parents as co-therapists Obvious advantages of parent training are the following : such training saves therapist's time and generalization problem is directly by-passed from clinic to home as the parent, not the teacher, teaches the child. However, training the parents of academically backward children could not have come into being unless direct behaviour modification had not already come into existence. Thus, direct behaviour modification studies form the context in which parents of academically backward children have to be trained. Briefly, the studies in this field can be divided in four sub-areas namely :

(1) Behaviour modification with children :

This area covers the direct behaviour modification studies with varieties of child problems such as aggression, autism, disruptive behaviour, delinquency, drug abuse, encopresis, enuresis, hyperactivity, language deficit,

learning disability, self-injurious behaviour and stuttering (e.g., Bijou, 1965; Gelfand & Hartmann, 1968; Philips & Ray, 1980; Risley and Baer, 1973; Sherman & Baer, 1969).[1]

(2) Behaviour modification with academically subnormal children :

This area covers the direct behaviour modification studies with varieties of aspects of mentally subnormal childrens' behaviour, their education and training, such as, language training, self-help skills training, toilet behaviour training, toothbrushing, janitorial skills, pedestrian skills, behaviour suppression of seriously disruptive behaviour and self-injurious behaviour (e.g., Azuma, 1972; Barton, 1970; Berkson & Landesmann, 1977; Foster, 1974; Frankel & Simmons, 1976; Hung, 1976; Judkins, 1976; Minge & Ball, 1967; Snyder, Lovitt & Smith, 1975 and Westling & Murden, 1978).

(3) Training parents in behaviour modification :

The studies in this area are concerned with training parents as behaviour therapists for their own children with a variety of problems, such as, anorexia, stealing, school phobia, maladaptive behaviours, aggression, temper tantrums, autism, tics and depression (e.g., Becker, 1971;

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[1] The APA Editorial style of 'Reference citations In Text' has been followed in this work everywhere for reporting multiple citations (APA Publication Manual p.59) i.e., if different authors are cited at the same point in text, the citations are arranged alphabetically by authors' surnames, separated by a semicolon, and enclosed in one pair of parentheses.

Berkowitz & Graziano, 1972; Forehand & Atkeson, 1977; Johnson & Katz, 1973; O'Dell, 1974; Patterson & Gullion, 1968; [illegible]son, 1977; Reisinger, Ora & Frangia, 1976; Tramontana, 1971; Wahler, 1969 and Zeilberger, Sampen & Sloane, 1968).

(d) Training parents of academically backward children/parents as behaviour therapists :

The studies in this area, deal with training parents of academically backward children as behaviour therapists (e.g., Gladstone & Sherman, 1975; Griffin, 1976; Rose, 1974 and Rotatori, Fox & Switzky, 1979).

The category of literature directly relevant to the present work was of course the fourth one amongst the afore-stated categories of literature. The studies quoted within each sub-area serve as illustrations. Elaborate survey of relevant literature within each sub-area is presented in the Chapter II : "Review of Literature".

Naturally, the present investigator found in herself the responsibility to adopt and to transfer the useful behavioural technology into the Indian setting. A detailed review of international journals revealed the encouraging scope of some beneficial practical contribution to the academically backward children and their parents in addition to the conceptual knowhow available on the training of academically backward children through their parents.

However, most of the controlled studies in parental training of the academically backward childrens' parents involved group comparison type "outcome studies", not at all evaluating parental training's impact on the academically backward child. There were found to be very few studies (e.g., Gladstone & Sherman, 1975; Koegel, Glahn & Nieminen, 1978; Koegel, Russo & Rincover, 1977), doing fine-grain functional analysis of various useful components involved in parental training that not only better enable the parents to acquire the behaviour modification skills but also result into observable, beneficial changes in the child's behaviour.

However, in the studies (Gladstone & Sherman, 1975; Koegel et al., 1978; Koegel et al., 1977), the role of specific instruction was not studied, nor generalization over a long time of follow up was done. These studies reported only generalization of behaviour modification skills acquired by parents over new child target behaviours.

There was also felt the conceptual necessity to replicate and verify the findings (Gladstone & Sherman, 1975; Koegel et al., 1978; Koegel et al., 1977), on a larger scale and in a different culture, population and setting.

The immediate research objectives of the present study were the following :

On the service front, the present work aimed at training mothers to become 'behavioural engineers' for their academically backward children so as to become independent of the professional behaviour modifier to train their children.

Terms and Definitions

Mental Subnormalcy :

The American Association on Mental Deficiency (A A M D) proposes the following definition of mental retardation : "Mental retardation refers to significantly sub-average general intellectual functioning existing concurrently with deficits in adaptive behaviour and manifested during the developmental period" (Grossman, 1973, p.11).

Thus, a diagnosis of mental subnormalcy is based on three important variables : measured IQ, degree of social adaptation, and whether the difficulties were early in onset. There has been a lot of criticism of the global concept of "IQ" by Jastak, 1949 (e.g., in Shaffer & Lazarus, 1952...., pp.129-133 and pp.153-161).

Mental subnormalcy is different from Autism i.e. conditions of mental illness due to emotional problems. Autistic children behave intellectually like mentally subnormal children. This is so because they have emotional blocks due to which they cannot exercise their true

intellectual potential; whereas Tredgold (1937, p.4-5) defined mental subnormalcy - he called it amentia - as "a state of incomplete mental development of such a kind and degree that the individual is incapable of adapting himself to the normal environment of his fellows in such a way as to maintain existence independently of supervision, control or external support."

The attempts to classify mental subnormalcy have passed through several stages from idiots, imbeciles and feeble-minded or morons to the categories and ranges in terms of IQ recognised by the AAMD, 1962, i.e., mild mental retardation (IQ 51-70), moderate mental retardation (IQ 36-50), severe mental retardation (IQ 21-35), and profound mental retardation (IQ 20 and below) on way to completely reject the IQ concept in favour of Adaptive Behaviour Scales of AAMD (Nihira, Foster, Shellhaas & Leland, 1974).

Adaptive behaviour has been defined as "the effectiveness or degree with which the individual meets the standards of personal independence and social responsibility expected of his age and cultural group" (Grossman, 1973). During infancy and early childhood, deficits in adaptive behaviour may be reflected in :

1. Sensory-Motor skills (turning, creeping, walking, manual manipulations).

2. Communication skills (social smiling, gesturing, speaking).
3. Self-help skills (eating, dressing, toileting, bathing).
4. Socialization (playing imitatively, playing with others cooperatively or imparallel depending upon age).

During childhood and early adolescence, deficits in adaptive behaviour may be reflected in :

1. Academic learning.
2. Judgement and reasoning in dealing with the environment.
3. Social skills (participation in group activities and effective interpersonal relationships).

In late adolescence and adulthood, deficits in adaptive behaviour may be reflected in :

1. Vocational competence.
2. Family and social duties.

The concept of mental subnormalcy as related to intelligence has been offered by various workers in the field (e.g., Jastak, 1949; Jordan, 1966), stressing that it is a condition as opposed to a disease. In this context, it is salutary to note that the proposed draft of Mental Health Bill for India excludes mental subnormalcy from the list of mental "illness" (Part m of clause 2, page VII of Draft

Proposal of Mental Health Bill C.B.-11, No.317 presented in the Indian Parliament on Nov.24, 1978).

Itard (1932) and Seguin (1866) related mental subnormalcy to sensations. Binet and Simon (1916), Terman and Merrill (1916, 1937 & 1960), Spearman (1927), Thurstone (1938) and Guilford (1966) explained it in terms of Psychometrics, whereas Piaget (1952), followed by his associates Flavell (1963) and Inhelder (1968), have proposed developmental concept of intelligence and hence of mental subnormalcy.

Hunt (1961), in the same vein, in his book, 'Intelligence And Experience', explains that intelligence is not innately fixed but acquired, contrary to Galton's (1869) notion of fixed intelligence. There has been development (Zigler, 1969) vs. defect (Milgram, 1973) controversy in the theories of mental subnormalcy. Piaget's (1952) theory encourages workers to appreciate the unique capabilities of subnormal persons rather than emphasizing their obvious limitations (Robinson & Robinson, 1976).

Training of Mentally Subnormals :

Mental subnormalcy is a chronic condition. The brain tissues once damaged can never be revived. Adequately diagnosed mental subnormalcy is never reversible to age average level once the early brain growth spurt period has

passed. Only with proper training i.e. through behaviour modification the remaining healthy brain tissues can be utilized to their maximum capacity and mentally subnormal persons may be taught social skills so that they may develop to the highest possible level of social independence.

It has been demonstrated by the researches of various pioneers in the education of retardates such as Itard (1932) and Seguin (1866) that mentally subnormal children could be enormously improved and can be brought to a very much higher level of functioning by training. It is interesting to note that the methods of Seguin (1866) were introduced into the special education of the mentally subnormal child in Italy by Maria Montessori and later applied by her to the education of normal children. The Montessori Kindergarten is very close in its inspiration to the techniques developed by Itard (1932) to treat the Savage of Aveyron.

Piaget's (1952) theory promises to guide workers in planning curricula suited for children at particular levels of intellectual development (Ginsburg and Opper, 1969). His work offers clues to the content of remedial programmes that constitute the mentally subnormal child's training. Early detection enables for possible prevention. By early intervention it is possible to bring the appropriate services to the individual and his/her family so that he/she may develop

to the highest possible level of social independence that his/her innate potential will allow.

The terms mental subnormalcy/mental retardation/mental deficiency where used in the present work have stood for both IQ below 70 and incompetence at social and scholastic adaptation, dependence on family members for his/her own bodily needs as noticed and reported by the subject's/patient's parents, plus judged to be mentally subnormal by psychiatrist or paediatrician and not having mental illness as judged by psychiatrist on referral.

Parent Training Techniques :

On parent training lies the future of the mentally subnormal children. Parental training is important for several reasons;

(i) Because early understanding of the problem by the parents and the parents taking active part in training will help in achieving the result of training and rehabilitating their mentally subnormal children to the point of independent functioning in the society.

(ii) The ever increasing number of mentally subnormals in need of training. The estimated population of the mentally retarded in India is about 15 to 16 millions, prevalence rate 3% (Ray, 1976, p.1). Mental retardation

is a problem that concerns about 6 percent of the population (The Hindustan Times, Aug, 20, 1981).

(iii) The less number of trained professionals to do direct training.

(iv) An inadequate number of appropriate institutions.

(v) Also, several accounts of the "austere" nature of environmental conditions in some institutions for the mentally retarded have been provided (Blatt, 1970; Blatt & Kaplan, 1966; Mac Andrew & Edgerton, 1964). Predictions of possible adverse effects that this type of impoverished physical and social residential environment could have on the development of severely and profoundly retarded children have been offered (Butterfield, 1967; Clarke & Clarke, 1953; Dentler & Mackler, 1964). Studies that have attempted to compare institutionalized with non-institutionalized children generally have favoured the latter (e.g., Centerwall & Centerwall, 1960; Farrell, 1956; Pasquale, Boroskin & Ross, 1971). Eyman, Tarjan and Cassady (1970) and Kaufman (1967) found evidence that the acquisition of social behaviour and basic self-help skills can be slowed as a result of admission to an institutional programme for the mentally subnormals. Enriched physical and social environment is lacking in residential institutions for mentally

subnormals (Berkson & Mason, 1964; Davenport & Berkson, 1963; Flavell, 1973; Hutt & Hutt, 1965). Data presented by Berkson and Mason (1964) indicate that attempts to modify adaptive and maladaptive behaviour through changes in the social and physical environment should be directed toward *younger* profoundly retarded individuals before their behaviour is characterized by the paucity of responses and limited interaction with social and physical stimuli typical of profoundly retarded adults reared in an impoverished environment. Spradlin and Girardeau (1966) suggested that adaptive behaviour of moderately and severely retarded individuals might be increased by structuring the environment to provide reinforcement for behaviour incompatible with maladaptive behaviour.

One way to achieve an enriched environment that requires less *expense*, and fewer maintenance problems can be; training parents through active operant based training programmes to increase the adaptive behaviours of their subnormal child. This approach could become a viable substitute to chronic "institutionalization" of the mentally subnormal child.

(vi) Parents are natural guardians of the child and live with the child far longer than any trained professional does. Parental education along the principles of behaviour modification has important preventive aspects because parents who are aware of the nature of the control they

impose on their child's behaviour may be better able to prevent the occurrence of future problems and to promote appropriate interpersonal behaviour and teach them new skills to become socially independent.

According to Skinner, (1953, p.6) the originator of operant approach, - "behaviour is lawful and determined". Behaviours of parents and subsequently their mentally subnormal childrens' can be changed for positive outcome. This has been demonstrated by the Experimental Analysis of Behaviour and the field of Applied Behaviour Analysis or Behaviour Modification.

To change the maladaptive interactional pattern and to promote adaptive ones between a parent and his/her mentally subnormal child what is needed is a more purposeful utilization of the laws of behaviour towards positive/adaptive direction which raises an important engineering problem i.e. with what methods/techniques should the parents be trained ? In other words, which mode of training parents is useful, namely, specific instruction, specific demonstration and/or a combination of general instruction and specific instruction.

The term 'parental training techniques' where used in the present work has stood for various methods of transmitting the information on behaviour modification skills of the mother of the mentally subnormal child, namely, specific instruction method, specific demonstration method, and a

combination of general instructions and specific instruction; the behaviour modification involved were the Operant procedures : the use of discriminatory stimulus (s^D), prompts/priming, shaping, reinforcing consequence and discrete trial.

Specific instruction and specific demonstration methods were compared to determine the relative contributions of these training methods to acquire specific intervention skills, aiming to teach specified child target task. Whereas general instruction plus specific instruction methods were implemented to study the mother's ability to generalize the acquired skills across (i) different non-taught new child target behaviours and (ii) over time i.e., at follow up of three months and six months.

The Experimental Analysis of Behaviour :

The Experimental Analysis of Behaviour emerged from operant approach of Skinner, (1953). Like experimental approach it is empirical, deterministic, parsimonious and testable. However, in the experimental approach, the emphasis is on the experimental variable, rather than on the behaviour of the organism. By contrast, "the experimental analysis of behaviour" has concentrated relatively more on the behaviour (Risley & Baer, 1973, p.283; Skinner, 1972, p.297).

It asks what variable can modify or eliminate the specified behaviour. Satisfaction of curiosity per se was the main concern of Skinner's (1956) controlled laboratory experiments.

The experimental analysts are concerned with causes of human behaviour. By discovering and analyzing these causes in a scientific manner, behaviour can be predicted, manipulated and controlled.

The dependent variable is probability of frequency or rate of responding as stated by Skinner (1966) and Bijou, Peterson, Harris, Allen and Johnston, (1969). The task of an experimental analysis is to discover all the variables present outside the organism of which probability of response is a function. The concept of discriminative stimulus (SD) and the related notion of stimulus control assign to stimuli a different and commonly observable role as independent variable. Contingencies of reinforcement are an important feature of the independent variable studied in an experimental analysis. Precurrent behaviour - behaviour maintained by its effects in maximizing the reinforcement of subsequent responses - is part of the subject matter of experimental analysis. The functional relations between independent and dependent variables is studied in experimental analysis of behaviour. The behavioural processes studied in an experimental analysis usually consists of changes in probability or rate of response

as a function of manipulated variables. The changes are followed in real time rather than from trial to trial. The changes are never studied according to apriori-hypothesis i.e. a preconceived "experimental design" as R.A.Fisher (1947) used that term. The usual practice is to construct an experimental space in which stimuli, responses and reinforcers are inter-related in a set of contingencies. The contingencies depend in part on the behaviour which the organism brings to the experiment. The number of organisms studied is much smaller than in ANOVA multi group designs, but the length of time during which any organism is observed is much greater. The experimental control of variables is emphasized rather than a later evaluation of their importance by means of statistical analysis. Thus, the experimental analysis of behaviour dispenses with theories of any sort by proceeding to find out. The behaviour reported in the experimental analysis of behaviour is that of single individuals; it is not the statistical product of an "average organism". It favours 'the empirico-inductive procedure of research, and not the hypothetico-deductive' (Bijou, 1970, p.65). In choosing stimuli, responses and reinforcers appropriate to the species being studied, the experimental analyst eliminates the sources of many species differences (Skinner, 1972, p.156).

There have been various criticisms against this approach, such as, that it is oversimplified and ignores

important facts, that a few obvious exceptions demonstrate that its formulations cannot possibly be adequate, that it was not about organisms but about rats, and very small group of rats at that. How could one be sure that rats, let alone animals of other species, would behave in the same way ? Also, the use of animals in the "Experimental Analysis Of Behaviour" approach meets with the objection that there is an essential gap between man and other animals, and that results of one can not be extrapolated to the other.

The shortcomings and exceptions are being accounted for in time with the advancing discoveries made in the experimental analysis of behaviour approach. It is a science in progress. The early stages of other sciences were similar and are not dismissed because they were not complete. Boyle's law, as originally stated, was quite inadequate and had to be changed as other variables were considered and as more exact measures were taken. It was not discarded, however, it was simply qualified and extended. Science advances from the simple to the complex; it is constantly concerned with whether the processes and laws discovered at one stage are adequate for the next. Moreover, the basic processes between man and other animals are not necessarily different. Darwin (1859) challenged the practice of segregation in which man set himself firmly apart from the animals. Darwin's challenge has been further strengthened by the discipline of Ethology; the study of organisms in their natural-habitats. Evidence

gathered through naturalistic observation indicates that evolutionary processes (evolution refers to those changes in species that occur very gradually over long time spans through natural selection for survival value) modify both the physical and behavioural attributes of organisms. The prominent ethologists, Huxley (1964), Lorenz (1965) and Tinbergen (1953) explained these issues and found similarity in 'occurrence of a repeatable unit' to 'unit releasers'. The entire repertoire of an individual and species exists prior to ontogenic and phylogenic selections but only in the form of minimal units.

Thus, useful similarities have been demonstrated over a fairly wide range of species. The fact is that methods first developed for the study of lower organisms, as well as the concepts and principles arising from that study, have been successfully applied to human behaviour, both in a basic analysis and in many technological applications.

In the present work, the term 'Experimental Analysis Of Behaviour' where used, has stood for experimental analysis of various parental training techniques, without any apriori-hypothesis,[2] to find out the functional relations between the independent variable (i.e. the parental training technique,

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[2] A 'flow-chart', (Appendix - 1.) was prepared before the study started, wherein the various parental training techniques were enlisted aiming to help mothers acquire behaviour modification skills.

namely, specific instruction method, specific demonstration method, and a combination of general instruction and specific instruction method) and the dependent variable (i.e. mother's skills/practices of training her mentally subnormal child).

The focus has been relatively more on teaching the mothers certain key behaviour modification skills and recording changes in mother's response/behaviour as a function of manipulated variables. The changes in the child's specified target behaviours have also been studied to serve as the validity check on the skills acquired by the mother.

The Study 1, systematically analyzed the components respective effectiveness using the multiple baseline design across mother's behaviours. Whereas in Study 2, multiple baseline design across subjects/mothers was used to assess the relative contibutions of various parent training techniques aiming to teach the mothers the five components of behavioural engineering, namely; SD, prompts/priming, shaping, reinforcing consequence and discrete trial.

Applied Behaviour Analysis/Behaviour Modification

Scientific analysis gives birth to technology. The term Applied Behaviour Analysis also called Behaviour Modification/Behavioural Technology/Behavioural Engineering is a systematic application of the principles and paradigms derived from experimental psychology including learning and conditioning

and the "experimental analysis of behaviour" approach, for the purpose of alleviation of human suffering, particularly emotional and behavioural, to ameliorate unadaptive behaviours, and to promote adaptation to the environment.

The term "Applied Behavioural Analysis" has two connotations : one connotation of the term behavioural analysis is identification of antecedent stimuli triggering the behaviour which in the clinical setting happens to be unadaptive behaviour. Methods used here are direct behavioural observations, psychophysiological monitoring, self-recording in vivo, anamnestic interview, self-monitoring e.g., "SUD" (Wolpe, 1973, p.120).

The second connotation of "Applied Behavioural Analysis" is the social utility, application of methodology and discoveries of experimental analysis of behaviour as typified in the journal, "Journal of Applied Behaviour Analysis, (JABA editorial policy, "The Journal Of Applied Behavior Analysis is primarily for the original publication of reports of experimental research involving applications of the experimental analysis of behavior to problems of social importance"), and championed by the Society for 'Experimental Analysis Of Behavior'. It involves direct observation and manipulatory analysis of functional relations existing between the behaviour and contingencies consequent thereupon in natural habitat. The methods used in such a

behavioural analysis is behavioural observation and recording using, for example, time sampling techniques.

Certain unique characteristics have become attached to "Applied Behavioral Analysis" approach as it has had to take the laboratory based "Experimental Analysis of Behaviour" approach to socially relevant settings and issues in natural open habitat e.g., nursary schools, homes for the handicapped, chronic wards of mental hospitals, prisons, and even daily social interactions within families.

One important result of Applied Behaviour Analysis approach due to its emphasis on applied aspect and natural social habitat, has been that the experimental/behavioural psychologist has come nearer to ethologist.

The second unique characteristic, partly forced upon it by the practical exigencies of the complexities involved in open field settings such as the Child-Guidance Clinics and homes of children, is the invention of certain newer experimental designs which provide much needed flexibility for experimental manipulation or trial and error in the sense of exploration without sacrificing the experimental rigour and controls. Thus, a new research strategy called the "Experimental analysis of single cases", is being increasingly exployed in behaviour modification research studies. These newer singlecase experimental designs are in fact many : the reversal design or ABAB, the withdrawal or BAB, the

multiple schedule design (stimulus discrimination), the multiple baseline design (response generalization), the concurrent schedule design, the changing criterian design, as well as several variations and combinations thereof (e.g., Baer, Wolf & Risley, 1968; Hersen & Barlow, 1976; Kazdin, 1975; Leitenberg, 1973; Risley & Wolf, 1972).

The advantages and relative merits of single subject designs vis-a-vis two and/or multi group designs have been adequately covered elsewhere (Campbell & Stanley, 1963; Chassan, 1967; and Sidman, 1960).

Briefly stated, the advantages of single-case manipulatory investigations are : feasibility to control the application and withdrawal of independent variable, to control secondary variation and to record the dependent variable more precisely (Hersen and Barlow, 1976). Bergin and Strupp (1972) demonstrated the limitations of the group comparison approach/design to applied problems in their extensive review of psychotherapy research. These difficulties, or objections, which tend to limit the usefulness of a group comparison approach in applied research, can be classified under five headings : (1) ethical objections, (2) practical problems in collecting large number of patients/cases, (3) averaging of results over the group, (4) generality of findings, and (5) inter-subject variability.

Thus, the datum here is what is observed, is manifest, or phenotypical; not what is inferred, or latent or

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Thus, the datum here is what is observed, is manifest, or phenotypical; not what is inferred, or latent or

genotypical. *Small* changes in *many* subjects are not usually considered significant in single-subject approach, whereas visibly *large*, significant (socially significant, not statistically) changes in even a *few* subjects or even one subject, usually are considered important. Generality of effect across subjects through replication is important, but intersubject generality is considered apart from the magnitude of change (Kazdin, 1973; Leitenberg, 1973; Risley & Baer, 1973; Skinner 1966).

Thus, one of the major weaknesses of traditional group designs is that results are often reported as averages, and such other "summary" statistics which describe only the *group* and not any real *individual* within it. Statistics is rarely, if ever, in evidence in Single-Case designs as "the effect of an intervention may be obfuscated with statistical analysis" (Skinner, 1956 -cited- in Hersen & Barlow, 1976, p.269). Researchers involved in single-case experimentation are less inclined to conduct descriptive studies; they are in favour of intensive ('Case') rather than extensive ('survey oriented') research, they are inclined towards ideographic ('singularizing') science rather than nomothetic ('generalizing') science.

In functional designs of behaviour modification, as against factorial designs, there is no use of control group (Townsend, 1953, p.83). In the former, the values of

independent variable are quantitatively changed and concomitant changes are noted in dependent variable. These observations demonstrate the functional relationship between the two variables and hence it is called 'functional design'. The question in this design is the relationship between the independent variable and the dependent variable. This design scores high on internal validity. By repeated replications of the observations on the same case the relationship is established as against few observations on many cases in factorial multi-group designs whereupon the design is weak in internal validity, thereby not establishing or establishing at best, doubtful relationship between the independent and the dependent variables. This aspect has also been stressed elsewhere (e.g., Kazdin, 1975, 1976; Wolpe, 1977).

The term Behaviour Modification/Behavioural Engineering/Applied Behaviour Analysis where used in the present work have stood for operant conditioning procedures particularly consisting of the following components :

(1) S^D (Discriminative Stimulus)

In practice, the discriminative stimulus (SD) is defined as the verbal instructions issued by the mother to the child. In the present work, the correct discriminatory stimulus in the form of verbal instruction/command to the child, was the one which was issued after securing eye-contact with the child, was discriminable i.e. uttered clearly and

was brief and stood distinct/apart from anything else that the mother said, was appropriate to the task, was consistent. that is topographically the same on any subsequent repetitions.

(2) Prompts

Prompting refers to 'excite to action', 'suggesting', 'helping out' and 'reminding'. It literally connotes 'encouragement of a prompt appearance of behaviour which already exist in some strength' (Skinner, 1968). Prompts are also provided as a means of helping the child to make responses he/she has not made before. The type of prompts used in the present study depended on the degree of the help needed by the child e.g., elicitation, and physical assistance involved a lot of help. Modelling and verbal prompting procedures involved less help. The correct prompts were defined as those which were effective in evoking the correct response in the child and were given if the correct response was not spontaneously emited by the subject within five seconds of the S^D.

(3) Shaping (response differentiation)

Shaping is defined as building a response by reinforcing successive approximations to a desired response. The correct shaping procedure involved the following steps : pinpointing the target behaviour desired from the child which was to begin with, beyond the child's reach; breaking the

target behaviour into small steps, the first step being easy for the subject to complete. In the beginning of the sequence of steps, each one of the steps when successfully completed was to be rewarded, but later on, gradually, the reward was to be delivered at gradually increasing grouping of steps. This procedure was to be continued until only the completed target response could be, as a whole, reinforced.

(4) Consequences

The child's behaviour operates, or has an effect, on the environment i.e. Child's behaviour affects mother's behaviour and the mother reacts in a certain way which is called consequence. The mother was deemed to provide a consequence correctly if she immediately, that is, within three seconds since the child's response, delivered the consequence. A consequence which increases or strengthenes the behaviour preceding it, is, by definition, a reinforcing consequence. The mother was to deliver the consequences contingently i.e. a reinforcing consequence only for child's correct response and non-reinforcing consequence for the child's incorrect response. The consequences were to be unambiguous, consistent and chosen carefully so that they were relevant/effective i.e. the child would work for obtaining it. The reinforcing consequences/rewards were to be faded out by the parent on subsequent trials of emission of the same target behaviour.

(5) Discrete Trials

A discrete trial is defined as each small attempt at teaching the child having a distinct beginning and a distinct end with some fixed intertrial interval on "no training". A correct trial began with the mother's delivery of an S^D and ended with the mother's delivery of the reward contingent upon the desired (ultimate), non-prompted target behaviour. Thus, within the period of a single trial there could be many smaller steps or attempts of shaping and promptings towards the final goal of non-prompted target-behaviour.

The Term Generalization and Importance Of Research In Generalization

The importance of research in the phenomenon of generalization can not be over emphasized. In fact, failure at therapeutic generalization is one of the great problems of therapy.

The present study focused not simply on mothers' acquisition of certain key behaviour modification skills to teach specific child target behaviour to the subject but also aimed at evaluating the generalizability of the operant skills acquired by the mothers. In the present study, generalization was defined in terms of mothers' ability to draw up programmes and train their mentally subnormal child independently without the therapist's guidance.

The criterion for generalization over time and across different child target behaviours, was that the mother under study successfully taught three successive target behaviours to her mentally subnormal child/subject without any further training to her from the therapist, suggesting that the mother not only succeeded at teaching her child the specific child-target behaviours but had acquired a generalized skill in operant training whereby she could now train her child/subject new as-yet-untried target behaviours i.e. the mother was now functioning as a therapist herself.

The term "Generalization over time" meant maintainance of the learnt skill by the mother over three and six monthly follow ups, whereas, "Generalization across different child target behaviours" meant that the mother could successfully teach three successive, ever new target behaviours to her child, without any further guidance/help to her from the therapist.

Chapter II

Review of Literature

"We must first prepare, a foundation for the whole, a complete and accurate natural and experimental history. We must not imagine or invent, but discover the acts and properties of nature".

Sir Francis Bacon, 1620

The compass of the present chapter could [illegible] be on all of these :-

Behaviour Modification, Parental Training, and Mentall Subnormals. But such an ambition would obviously cover millions of pages, for, the literature on Behaviour Modification/Applied Behaviour Analysis/Behavioural Engineering alone has grown to non-compassable limits with at least international journals exclusively devoted to the field of Behaviour Modification/Therapy (The Behaviour Research & Therapy, Behaviour Therapy, Journal of Behaviour Therapy & Experimental Psychiatry, and Journal of Applied Behaviour Analysis - in that order of their chronological origin). Pikoff (1980) has reported that, "a computer search of Psychological Abstracts for publications linking behavioral applications and children uncovered some 700 references for the period 1967-1979 alone." Thus, it is evident that the field of behaviour modification with children is growing fast and has become very extensive.

The focus of the present chapter, therefore, is on parental training techniques. After briefly surveying the

work that has been done in the area of (1) [illegible] [illegible] children and (2) [illegible] ation with mentally subnormal children, the various [illegible] studies related to parent training in general will [illegible] followed by the different research papers published [illegible] area of parental training in the context of mentally sub-normals, with brief description of the tasks, subjects, independent and dependent variables and results of each paper.

(1) Behaviour Modification with children in general.

Behaviour modification has been discussed as an alternative to traditional forms of child therapy ([illegible], 1961; Bandura, 1961; Grossberg, 1964; Ross, 1964; Ullmann and Krasner, 1965; Patterson, 1971), and has been demonstrated with virtually all child "diagnostic" categories (Brown, 1970), suggesting its overall applicability to children's behaviour problems. However, such demonstrations reported through about 1967 were mainly limited to single subject descriptive case studies usually dealing with clearly-delineated single problem behaviours. Therapy was limited to clinic and hospital settings, had little or no follow up and lacked important controls (Russo, 1964; Breger and McGaugh, 1965; Patterson and Brodsky, 1966; Gelfand and Hartmann, 1968; Leff, 1968).

However, in the last decade, behaviour modification studies with improved research designs and methodology, been reported in various research articles and many reviews of literature have appeared covering varieties of child problems, for example, aggression (Adams, 1973; [illegible]), anorexia nervosa (Bhanji & Thompson, 1974), asthma (Lukeman, 1975), autism (Akiyama, 1977; Carr, Binkoff, Kologinsky & Eddy, 1978; Geller, 1972, Green, 1972; Helm, 1976; Koegel, Firestone, Kramme and Dunlop, 1974; Lichstein & Schreibman, 1976; Lovaas, 1974; Margolies, 1977; Rincover & Koegel, 1975; Schreibman, 1975), thumbsucking (Knight & McKenzie, 1974), hyperactivity (Ayllon, Layman & Kandel, 1975; Brundage, Forehand & Ciminero, 1977; Prout, 1977; McPherson, 1977), [illegible] (Corbett, 1975), in class room setting (Altman & Linton, 1971; Danaher, 1974; Forness, 1970; Hayes, 1976; Jenson, 1978; Litow & Pumroy, 1975; McGee, Kauffman & Nussen, 1977; McLaughlin, 1974; McLaughlin & Scott, 1976; O'Leary & Drabman, 1971; Strain, Cooke & Apolloni, 1976; Wildman & Wildman, 1975; Winett & Winkler, 1972; Workman & Hector, 1978), Contingency management (Birnbrauer, 1971; Luke & Sulzer-Azaroff, 1973), delinquency (Davidson & Seidman, 1974; Stephens, 1973), drug abuse (Volpe, 1977), encopresis (Johnson & Van Bourgondien, 1977), enuresis (Doleys, 1977; Morgan, 1978; Williams, 1974), language training (Bloom, 1973; Carmody, 1975; Garcia & De Haven, 1974; Paquet & Malcuit, 1975; Wehman, 1977), learning disabilities (Newman, Deitchman & Newman, 1975), Self-help

(Westling & Murden, 1978), self-injury (Corbett, 1975; Johnson & Baumeister, 1978; Sooley, 1971), Stuttering (Ingham & Andrews, 1973; Sanders, 1970).

In fact, the field of behaviour modification with children consists of so large a literature that a secondary literature of review articles has emerged. As a point of reference for the overview of the field, the following review articles are suggested : Gelfand and Hartmann (1968); Pawlicki (1970); and Phillips and Ray (1980).

(2) Behaviour Modification with the mentally subnormal children/persons.

An extensive research has been carried out in the area of direct behaviour modification with mentally subnormals. Emphasis of research has been on education and training of the mentally sub-normals to improve their social adaptation. Diverse areas of training have been reported in the research articles and reviews of literature, all involving the mentally subnormals e.g., control of aggression (Birnbrauer, 1968; Bostow & Bailey, 1969; Dietz & Repp, 1973; Plummer, Baer & Le Blanc, 1977; Repp & Deitz, 1974), toilet training (Azrin, Bugle & O'Brien, 1971; Azrin & Fox, 1971; Mahoney, Van Wagenen & Meyerson, 1971; Osarchuk, 1973; Siegel, 1977), toothbrushing (Horner & Keilitz, 1975), monetary skills (Lowe & Cuvo, 1976; Miller, Cuvo & Borakove, 1977; Trace,

Cuvo & Criswell, 1977), pedestrian skills (Page, Iwata & Neef, 1976), language training (Barton, 1970; Garcia, [illegible]; [illegible]; Guess, 1969; Guess, Sailor, Rutherford & Baer, 1968; Hung, 1976; McReynolds, 1969; ~~[illegible] Schumaker & Sherman, 1970;~~ Snyder, Lovitt & Smith, 1975; Wheeler & Wislocki, 1977), ~~eliminating stereotypy (Harris & Wolchik 1979)~~ Social responses (Panda & Lynch, 1972; Reiss, 1974; Whitman, Mercurio & Caponigri, 1970), picture naming (Stephens, Pear, Wray and Jackson, 1975), Imitation training (Garcia, 1976; Garcia & Trujillo, 1977; Martin, 1972; Whitman, Zakaras and Chardos, 1971), eliminating self-injurious behaviour (Corbett, 1975; Corte, Wolf & Locke, 1971; Frankel & Simmons, 1976; Lovaas & Simmons, 1969), training in self-help skills (Minge & Ball, 1967), Meal-time behaviour (O'Brien, Bugle & Azrin, 1972), Janitorial skills (Cuvo, Leaf & Borakove, 1978).

The following review articles have appeared in various psychological journals. Azuma (1972); Bates and Wehman (1977); Berkson and Landesman-Dwyer (1977); Foster (1974); Perlman and Stober (1976); Reiss (1974) and Westling and Murden (1978) all in the area of behaviour modification with the mentally subnormal children/persons.

(3) Training Parents In Behaviour Modification.

Parent training in behaviour modification is a young field with two thirds of the research done since

1968 (Goodall, 1972). It is part of the larger area of applied behaviour analysis (Baer, Wolf & Risley, 1968). Training parents as behaviour therapists for their own children is a recent development emerging from the systematic application of learning principles, and is one of the fast growing areas of clinical intervention (Graziano, 1977; Guerney, 1969; O'Dell, 1974).

In fact, now, practice of Behaviour Therapy/ Behaviour Modification in West Europe (West Germany and Austria) has split into two main trends (Singh, 1981 - personal communication) : The office-based approach, and the community-oriented approach. The Vienese practice of behaviour therapy/behaviour modification is office-based, fee-oriented physician-like approach perhaps because psychiatrists dominate the behaviour therapy field in Vienna. The Styrean approach (Graz and neighbouring areas, also Munich), due to the dominance of Psychologists there in the field of behaviour modification/therapy, on the other hand, is that the "practitioner" goes to the community/client much like a social worker or social engineer. It is this latter trend, the Community approach in the delivery of behaviour therapy/ modification service which is becoming increasingly popular in the recent literature of Behaviour Therapy/Behaviour Modification partly because more psychologists than psychiatrists adhere to it - and there are more psychologists than

psychiatrists in the field of Behaviour Therapy (refer Membership Directory of AABT and Roster of Clinical Fellows of Behavior Therapy & Res. Soc.) and also because this approach has certain advantages to the general public and therefor this approach is gaining public support. This approach - the Community approach - is, moreover, uniquely suited to the special needs of the illiterate masses of the overpopulated developing countries. The essential feature of Community approach is de-mystification of technological advances and training the family members themselves to solve their own problems including the health-related problems.

Parent training approach attempts to overcome some major limitations of traditional child psychotherapy, which is seen ~~x~~ as an essentially "artificial" situation, occupying only a small portion of the patient's/child's life and possibly only having incidental relation to it (Graziano, 1967). The therapist operating in an isolated office might never directly observe parent child interaction in its natural environment (Hawkins, Peterson, Schweid & Bijou, 1966) or the behaviour which brings the child to the clinician (e.g., anorexia, stealing, school phobia, which are periodic and rarely occur during therapy contact; Russo, 1964). The therapist, not knowing relevant environmental details, may tend to give so technical or general suggestions, that parents, teachers and even other therapists are unable to

translate them into specific behaviour. Some parents are blamed, are unable to cope with the demands of a disturbed child (Graziano, 1967), receive little practical guidance from the therapist and find no ebbing of their feelings of helplessness, rage and literal acts (Holland, 19[illegible]; Patterson, McNeal, Hawkins & Phelps, 1967). Peine (19[illegible]) notes that most of a child's behaviour is maintained by it's effects upon the natural environment and can be most effectively modified by changing the reinforcing contingencies supplied by the social agents who live with the child. Thus, this Community or Parent Training approach assumes that : (1) a child's maladaptive behaviour has been acquired in his natural environment and can best be changed by modifying that environment; and (2) the maintenance of newly developed adaptive behaviour also depends upon successful modification in the natural environment. If the natural environment is not modified, new, adaptive behaviour developed in clinic may be extinguished at home and maladaptive behaviour which has been extinguished or in some way decreased in clinic may be reinstated at home. Therefore, as concluded by O'Leary, O'Leary & Becker (1967, p.133), ". . . the direct modification of children's behaviour by parents under a clinician's guidance, would seem to be a very useful approach." The technology of behaviour modification has provided greater access to the natural environments of children than ever

before, and the parents can thus become not merely recipients of therapy, but also active behavioural co-therapists ([illegible] & Susskind, 1969), the therapist's partners in the therapeutic endeavors. Walder, Cohen and Leston (1967), regarding themselves as consultant-trainers view parents as the responsible agents in the direct control of the child's natural environment, and assert that behavioural goals should be determined by the parents.

In addition to the need for empirical research on the effectiveness of parent-training approaches, attention should be directed to a careful examination of the implications for eventual preventive mental health programmes i.e. actively training potential clients to be *future problem solvers* rather than *future service seekers* (Walder, Cohen, Breiter, Warman, Orne, Johnson & Pavey, 1971) has clear preventive implications.

Thus, the trend towards the increasing use of parents as change agents for their children was given impetus by personpower shortages in the mental health field, revised service delivery approaches, and the new uses of non-professionals and paraprofessionals (Reisinger, Ora & Frangia, 1976). In particular behavioural approaches to child treatment have emphasized the need to train social agents, especially parents, in the child's natural environment in order to bring about durable, *generalized* changes in

children. As a consequence of these developments, there has been [illegible] the treatment tech[illegible] that make the treatment procedures operational. [illegible] have resulted from an awareness of the [illegible] for training parents or for communicating the information necessary for parents to become effective change agents.

Parent Training Manuals : Since the publication of Patterson and Gullion's original version of 'Living With Children' in 1968 and 'Families' 1971, manuals for parents and for professionals who train parents have been produced at an increasing rate by behaviourally oriented authors seeking to meet the needs of the growing number of consumers of these materials. Some of the publications have been aimed at parents in general (Alvord, 1973; and Becker, 1971) while others have been intended for use as reading material for parents seeking specific professional guidance. Some manuals focus on normal children, whereas many of them have as their targets children with varying behavioural and developmental problems. Topics of the manuals range from general rearing of children to teaching of specific skills such as toileting (Azrin & Foxx, 1977). A more recent development is the publication of manuals for professionals and paraprofessionals to train parents to help their own problem children (e.g., Patterson, Reid, Jones & Conger, 1975). These manuals usually provide extensive descriptions

[illegible] procedures for systematic assessment of parent child interactions and for intervention, [illegible] the technology of parent training. Some manuals describe [illegible] for training parents in groups, while others emphasize an individual family oriented clinical approach.

Barnal and North (1978) have surveyed twenty-six parent-training manuals and recommend that manuals be evaluated by conducting empirical research to determine their usefulness and efficacy in training parents.

Parent training has focused primarily on operant methods, with very few papers reporting major use of respondent-based techniques. Mowrer (1958) worked on enuretic using electric bell and pad technique for enuresis. This study has historical importance in the field of Behaviour Therapy. DeLeon and Mandell (1966) used an electric respondent conditioning device with functionally enuretic children. Parent training was minimal, consisting only of record-keeping of bedwetting and instructions in the daily use of the apparatus to condition children to awaken on full-bladder cues. Both frequency and severity of bedwetting were most effectively and quickly reduced with the conditioning device. Lovibund (1964), and Clement (1970 a,b) used the respondent model. However these studies came at a time when Behaviour Therapy had just been invented and as such even simple

demonstrations without any experimental controls he [illegible] ical importance.

Studies involving training parents in operant techniques cover a wide range of presenting problems and intervention approaches. The studies varied along the dimensions of (1) the nature and complexity of parental involvement (2) the level of knowledge and sophistication in learning theory principles acquired by the parent; and (3) the level of rigor and sophistication of the methodology employed. The programmes reported in the published and unpublished literature vary from elementary contingency management for simple presenting complaints (e.g. Williams, 1959; Straughan, 1964; Nolan and Pence, 1970; Graziano, 1971 wherein the extent of parental involvement was minimal and brief), to complex behaviour modification programmes for severe multiple behaviour problems (e.g. Walder, Cohen & Daston, 1967; Patterson, Cobb & Ray, 1972).

Within these papers, parental involvement varies from carrying out strictly defined instructions with little or no systematic learning required, to participation as a co-therapist in observation, behavioural analysis, programme planning, and carrying out the treatment plan.

Papers by Sloane, Johnston and Bijou (1967); Wolf, Risley and Mees (1964); Wolf, Risley, Johnston, Harris and

Allen (1967) and Clement (1970, a, b) deal with [illegible] behaviour problems and [illegible] through the [illegible] involvement and methodological sophistication. However, [illegible] primary responsibility for the treatment programme [illegible] the hands of the professional and the parents [illegible] portions of the programmes at home and were not required to master general behavioural principeles. The major drawback of these studies was that they did not report data beyond descriptions, and it is difficult to assess the degree to which the change in parental roles did, in fact, affect the children.

The studies conducted by Russo (1964); Welsh (19[illegible]); Holland (1969); Gardner, Pearson, Bercovici and Bricker (1968); Wagner (1968) also have methodological weaknesses, reporting no formal data, no methods for evaluating the effects of treatment, little detail about the actual parent training procedures, no attempts to assess reliability of the parents' observation and few formal follow-ups.

The studies reported by Allen and Harris (1966), Peine (1969), Zeilberger, Sampen and Sloane (1968), O'Leary, O'Leary and Becker (1967) dealt with serious clinical problems. Although these papers have successfully combined methodological rigour, parental responsibility and treatment within the natural environment in treating serious problems, the

parents still did not share the responsibility [illegible] of designing and evaluating programmes, [illegible] was essentially limited to the problems at hand, and no aimed at teaching general principles and competence [illegible] future independent application. Thus, the [illegible] training was still primarily *therapeutic* and not *preventive* for parents simply carried out specified programmes at [illegible]. they had little to do with *planning programmes*. Also, [illegible] failed to include a follow up, hence it is not clear [illegible] trained the parents were to maintain the behaviour changes on their own, or to deal with new problems arising in the future.

The study by Hawkins, Peterson, Schweid and Bijou (1966) utilized higher levels of controlled methodology, reliability and validity checks as well as a greater degree of parent training employing baseline measures, multiple observers and reversal to baseline procedures. However, parents still were not "Co-therapists", and they did not receive adequate training to enable them to formulate and carry out programmes independently.

Spurred by early successes, other studies expanded to include multiple problem behaviours (Patterson & Brodsky, 1966) and large programmes dealing with groups that used parent training approach (Lindsley, 1966; Mira, 1970). Programmed instruction methods (Patterson, McNeal, Hawkins &

Phelps, 1967), Observational measurement systems ([illegible]), and [illegible] systems for teaching, such [illegible] were tried (Bernal, Williams, Miller & Reagor, 19[illegible]).

Parents have modified specific behaviours [illegible] children who were labelled as brain damaged (Patterson, [illegible] Whittier & Wright, 1965; Salzinger, Feldman & Portnoy, 1970), retarded (Walder, Cohen, Breiter, Daston, Hirsch & Leibowitz, 1969), autistic (Wetzel, Baker, Roney & Martin, 1966; [illegible], 1968; Mathis, 1971), psychotic (Gardner, Pearson, [illegible] & Bricker, 1968) and school phobic (Patterson, 1965).

Wahler, Winkel, Peterson and Morrison (19[illegible]) and Wahler (1969) discussed five boys whose severe "oppositional" behaviour was modified. It has been demonstrated that a variety of problems, forming an entire "syndrome" of behaviours, can be simultaneously modified.

Patterson and Brodsky (1966) reported a case study of a boy who had long standing problems of screaming & crying, aggression, enuresis, frequent kicking and biting others. By modifying the behaviours of the persons who interacted with the boy and teaching them reward and extinction procedures, the researchers were able to successfully reduce the child's undesirable behaviours in two weeks to a rate found in most other children. Other experimenters have dealt with specific types of behaviour problems. Patterson, Cobb and

Ray (1972) have attempted to develop procedures to [illegible] well, train parents of aggressive boys and Bernal, Duryee, [illegible] and Burns (1968) and Bernal (1969) have dealt specifically with what they called the "brat syndrome".

Specific child behaviours modified by parents include: toilet training (Madsen, 1965; Pumroy & Pumroy, 1965), tantrum behaviour (Williams, 1959), withdrawal behaviour (Allen, Hart, Buell, Harris and Wolf, 1965), aggressive behaviour (Zeilberger et al., 1968), sibling fighting (O'Leary, O'Leary & Becker, 1967), as well as a variety of everyday home problems (Hall, Axelrod, Tyler, Grief, Jones & Robertson, 1972; Lindsley, 1966; [illegible]). However, due to expanding literature, no list can be exhaustive of research conducted in this area.

Some studies have presented data suggesting relationships between parent characteristics (types of parents) and successful parent training, e.g., Salzinger et al. (1970) reported parent success relating to educational level, intelligence and particularly reading ability. Training was based primarily on verbal learning of behavioural principles.

Patterson et al. (1972) found training some uneducated lower socio-economic parents to be difficult because of their lack of even the most rudimentary child management skills and low availability of reinforcers. Working with parents without spouses, or working in homes with parental

conflicts required considerably more time and effort to achieve success. [illegible], [illegible] and Hoffman ([illegible]), worked with six mothers and their pre-school oppositional children. They found that mothers who had reported parental difficulties were notably less able to demonstrate [illegible] generalization than were their counterparts. However, other authors (Hirsch & Walder, 1969; Mira, 1970) have not found a relationship between parents education, intelligence or socioeconomic level and training success. These latter studies emphasized direct teaching of parent behaviours and minimized verbal learning.

Some studies formally screened psychotics (e.g., Wiltz, 1969). Patterson (1965) reserved his treatment techniques for persons who showed no obvious signs of pathology. Bernal et al. (1972, p.25) achieved some initial success in training a "highly unstable divorced borderline psychotic mother" but reported difficulty after a few sessions when her "personality problems" sabotaged the success.

Individual parent characteristics have been found to interact with types of training techniques to further increase diversity (Gelfand et al., 1968). Bernal et al. (1968) concluded that individually tailored programmes are needed to deal with this variability.

Two tentative conclusions can be drawn about the effect of parent characteristics on training. (1) Some learning approaches sometimes necessitate more highly [illegible] parents. (2) Programmes that emphasize actual behavioral learning and tailored programmes are able to produce [illegible] results in a wider range of parents (O'Dell, 1974).

Training approaches that have been reported comprise of groups vs individual training. Walder et al. (1969) categorized three basic types of approaches in training parents : (a) educational groups, (b) individual consultations and (c) controlled learning environments. Hall et al. (1972) conducted parent groups under what they called a "responsive teaching model." Other investigators included group experiences as part of their training programme (xxxx, xxxx Rose, 1969). However, some groups included a phase of individual training (Patterson et al., 1972; Peine, 1971; Salzinger et al., 1970; Walder et al., 1969). Individual consultations have been conducted without seeing the target child (Johnson, 1971; Madsen, 1965). Where parents need specific training for specific problems, individual consultations provide the needed supervision on a one to one basis (Bernal et al., 1968; Patterson et al., 1972). Mira (1970) reported in a summary of 82 cases that individual treatment required 2.1 hours of professional time to achieve modification, whereas group treatment averaged 3.9 hours per parent.

Bernal (1969), who used individual consultation [illegible] both in the laboratory and the home, concluded that training in complex behavioural chains makes direct instruction in a "one-to-one" framework a virtual necessity. Thus, direct modification of parent behaviour on a one to one basis is being frequently used and is the most effective training approach.

Two of the major variations in approaches to selection of content to be taught to parents are : Teaching knowledge of behaviour modification on a verbal level, and teaching actual behavioural skills. These areas also vary within themselves on whether they attempt to teach skills for general child management application or for specific problems.

Many parents have been trained on a verbal basis in the basic concepts of behaviour modification and social learning theory (Patterson et al., 1972; Peine, 1972). Some parents have been trained in verbal understanding of more specific techniques. Parents have been taught the rules of a token economy system (Alvord, 1971) or specific steps for toilet training a child (Madsen, 1965). Many of the reported case studies consist of the therapist offering the parent specific verbal advice that the parent is to internalize and later transfer the skills into actual behaviours (Allen & Harris, 1966; Wahler, 1969; Zeilberger et al., 1968). Another

parent is observed while interacting with the child [illegible] instructions [illegible] on their [illegible] of cueing parents while they interact with the child [illegible] signal lights (Wahler, Winkel, Peterson & Morrison, 1965), hand signals (O'Leary et al., 1967) walkie-talkie ([illegible] et al., 1972), and head-phone connections.

One of the most successfully used techniques [illegible] has been reported is "modeling" which involves the experimenter demonstrating the behaviours the parent is to acquire (Johnson & Brown, 1969; Patterson & Brodsky, 1966; Rose, 1969; Sherman & Baer, 1969; Straughan, 1964). A [illegible] of this "Modeling" approach is called "behavioural rehearsal" in which the parent practices the behaviours to be used under direct supervision of the experimenter before applying them to the child (Gittleman, 1965; Johnson, 1971; Rose, 1969). Bernal (1969), Bernal et. al., (1972), and Johnson (1971) have used videotapes in order to give parents more explicit focus on their behaviour. Some experimenters combined many of these techniques. Rose (1969) used interviews, lectures, individual instruction, discussion, behavioural home assignments, modeling, behavioural rehearsal and contracts with the parents.

One major contribution of studies in this area has been to empirically demonstrate the functional relationship between parental contingencies and child behaviour. The

studies that have been reported [illegible] show [illegible] when [illegible] behaviour [illegible] so that [illegible] behaviour of the child receive reinforcement from the [illegible] and undesirable behaviours of the child are ignored, the child's behaviour changes in desired directions. Often the change is dramatic.

In a number of reports reviewed by Berkowitz and Graziano (1972), Graziano (1977), Johnson and Katz (1973), Pawlicki (1970), investigators have concluded that behavioural parent training is an effective intervention for children. However, much of the research has not incorporated [illegible] design features (Forehand & Atkeson, 1977; Graziano, 1977; O'Dell, 1974; Reisinger, Ora & Frangia, 1976; Tramontana, 1971). However, in these studies, the following lacunae existed : (i) The procedures used to teach trainees to apply behavioural techniques were not described completely, precluding their analysis. (ii) The studies lacked experimental controls that would demonstrate convincingly that changes in trainee behaviour were due to exposure to specific training procedures. The most common experimental design among these studies has been the reversal design (Baer, Wolf & Risley, 1968), but its use was to demonstrate control over child behaviour rather than control over the behaviour of those training the children (e.g., the parents). (iii) None of the studies provided

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reliable measures of generalized performance by trainees as a result of training. To develop a successful treatment programme, one must be concerned with at least three major results : first, the initial acquisition of a behavioural change; second, the generalization of that change to settings outside the treatment and third, the maintenance of change over time in settings outside treatment (Baer, Wolf & Risley, 1968; Bandura, 1969, 1976). Generalization of trainee skills could also be demonstrated by showing that after training was completed, the trainee could teach the same child different responses i.e. generalization of skills across different child target behaviours. Generalization and maintenance do not occur naturally without special intervention. "Generalization must be programmed rather than expected or lamented" (Baer, Wolf & Risley, 1968, p. 97).

A few investigators have attempted to analyze training procedures used either to teach initial acquisition of behaviour-modification techniques (Bricker, Morgan & Grabowski, 1972; Brown, Montgomery & Barclay, 1969; Cooper, Thomson & Baer, 1970; Herbert & Baer, 1972), or to maintain behavioural skills already developed through previous training (Katz, Johnson & Gelfand, 1972; Panyon, Boozer & Morris, 1970). None of these investigations, however, attempted to demonstrate that trainees acquired generalized skills as a result of training.

The successful application of behaviour-modification techniques in homes, classrooms, and institutional settings has stimulated interest in the experimental analysis of procedures that might be used to teach parents, teachers, and others to apply those techniques themselves.

Experimental analysis of parent training procedures for teaching behaviour modification techniques has focused on the effects of *verbal instructions* (e.g., Cossairt et al., 1973; Katz, Johnson, & Gelfand, 1972) and *feedback* (Cooper, Thomson & Baer, 1970; Panyan et. al., 1970; Parsonson, Baer, & Bear, 1974; Quilitch, 1975). The studies of verbal instructions indicate that *simply telling* teachers, for example, to pay attention to desired classroom behaviour is *not* likely to induce them to do it or to continue doing it, unless immediate reinforcement or feedback is provided for their desired performance. Feedback or knowledge of results can be effective for the initial training of behaviour-modification skills (e.g., Cooper et.al., 1970), as well as for improvement and maintenance (e.g., Panyan et al., 1970). Modeling is often one of several components of behavioural training programmes (e.g., Gladstone & Sherman, 1975; Ringer, 1973; Wetzel, 1970) and training programmes for psychotherapists (e.g., Finney, 1968; Strupp & Jenkins, 1963), but analysis of its independent effect on *specific* trainee responses has received little attention. One study (Gladstone & Spencer, 1977) sought

to evaluate the effects of model's demonstration of response-contingent praise or the praise of five mental retardates by counsellors while they conducted hygiene training sessions with severely retarded children. The limitation of this study was that it did not evaluate whether the counsellor's skill in contingently praising correct hygiene responses improved those responses or not.

In recent years, attempts have been made to evaluate parent training techniques (e.g. Loleys, Doster & Cartelli, 1976; Koegel & Rincover, 1977). In the study conducted by Loleys, et.al., 1976, a group parent training programme was applied in an analog situation to five mothers of learning disabled children to assess its effect upon three classes of verbal responses i.e. reinforcements, commands and questions. The training was conducted in two phases. The first phase, lecture-role-playing, employed written materials, lectures and releplaying as training techniques. The second phase, feedback, utilized post-interaction feedback from experimenters, self recording from audiotapes and recording of other parent child interactions. Behavioural measures after the first phase showed small changes from baseline, while the same measures taken after the feedback phase revealed significant differences for each of the target behaviours. Behavioural changes observed at the end of training were maintained over a 30 week follow up. The results suggest

that although other training techniques may increase parental knowledge of how to respond, immediate feedback and self-recording appear necessary to ensure the acquisition of these responses.

Ray (1976) found videotaped modeling coupled with roleplaying to be superior to either a written presentation or a lecture but not superior to videotaped modeling alone. Flanagan, Adams and Forehand (1979) found videotaped modeling superior to written presentation with lecture and roleplaying falling in between these methods in effectiveness. O'Dell, Mahoney, Horton, and Turner (1979) and O'Dell, Krug, O'Quin and Kasnetz (1980 a) found videotaped modeling coupled with a brief live individual check out to be superior to live modeling combined with roleplayed rehearsal. They also found the videotape alone to be superior to the written manual. Other presentations they compared, such as written manual plus brief individual check out, audiotape, audiotape plus brief individual check out and live modeling with rehearsal fell intermediately in effectiveness between the written manual and videotaped modeling presentations. However, O'Dell, Krug, Patterson, and Faustman (1980 b) could not replicate these differences in treatment methods when training included a written take-home manual for all parents.

These studies had a variety of shortcomings. The Ray (1976) study assessed only in-clinic, short-term parent

skill changes via an audiotaped analogue outcome measure. The Flanagan et al., (1979) study mixed the media aspect of the study by having a question and answer period for all groups and did not assess the details of the parent skill or outcome measure. The O'Dell et al., (1979; 1980 a) studies did not include long-term, in-home measures or observe both the parents and their children. None of the above studies, except O'Dell et al. (1980 b), included materials for in-home training; and none attempted to assess outcome in terms of changes in the child's behaviour.

Study conducted by Koegel et al. (1977), aimed to assess and train teachers in the generalized use of behaviour modification with autistic children. However, the training procedure was a package involving the use of modeling, feedback, and training manuals. The limitation of this study was that it did not do a component analysis and as such it can not be held with conviction which components did/didn't contribute to the results. It has been suggested that a component analysis of this or any other parent/teacher training programme might lead to interesting results (Bandu 1976; Kazdin & Moyer, 1976). It is possible that certain components influence acquisition of the techniques and othe influence generalization.

One such study (Koegel, Glahn & Nieminen, 1978) using autistic children was reported doing fine-grain

functional analysis of various useful components involved in parental training techniques that not only showed effectiveness in terms of the parents (of autistic children) acquiring the behaviour modification skills but also beneficial changes in the child's (autistic) behaviour. However, in this study, the role of specific instruction was not studied, nor generalization over a long time of follow up was done ; only generalization of behaviour modification skills acquired by parents over new child target behaviours was studied in this article.

Summary Of The Literature Review :

It is evident from the above review of literature that the general field of training parents in behaviour modification with varieties of child problems has become very expanded and advanced as regards implementation of technology and methodology. However, the following research areas are worth further research :

(1) Further research should be carried out to see whether programmes that emphasize actual behavioural learning and tailored programmes are able to produce results in a wider range of parents as compared to verbal learning approaches ?

(2) Further work should be conducted to demonstrate reliable measures of generalized performance by trainees as c

result of training across different child target behaviours and over time i.e. at follow up.

(3) Research should be carried out to find out whether verbal instruction alone is sufficient for training or immediate reinforcement and/or feedback should be coupled with it for the initial training of behaviour modification.

(4) Whether modeling is more effective than verbal instruction for training psychotherapists. More attention should be given in analysis of its independent effect on specific trainee responses.

(5) Further research is needed to find out which components of parental training influence acquisition of the techniques and which influence generalization.

(6) Researches should aim at finding out the role of specific instruction in parent training. Also, generalization over a long time of follow up should be further studied.

Training Parents of Mentally Subnormal Children As Behaviour Modifiers.

Despite the increasing use of behaviour modification techniques, experimental demonstrations of effective programmes to teach behaviour modification skills to the parents of mentally subnormal children are scarce. An effective training programme consists of accomplishing at

least two things. First, teach a person to use specific procedures to modify/teach behaviour that he or she could not teach before training. Second, establish a set of skills sufficiently general to allow the person to teach different behaviours to different people/children.

A number of studies published in the last decade in general, leave little doubt that parents, school teachers, ward attendants and others can successfully use behaviour-modification procedures when supervised by experienced behavioural engineers (e.g., Rose, 1974; Watson, 1972; Watson, Gardner & Sanders, 1971) The primary purpose of these studies, however, was not to analyze the training procedures themselves, but to show that people other than experienced behavioural engineers could use the techniques successfully. These studies did not demonstrate that particular Training procedures changed trainee behaviour or that trainees acquired generalized skills as a result of training. Only one study (Gladstone & Sherman, 1975) evaluated whether a set of training procedures consisting of video-taped modeling, rehearsal and corrective feedback would teach persons to use behaviour modification techniques to teach a retarded child. The study also examined whether a person so trained to apply specific techniques to teach one child a particular response, could apply the same techniques to teach a different child a different response without further professional help. However,

the limitations of this study was that it did not evaluate how general were the repertoires that the trainees developed i.e. generalization across several child behaviours/child target tasks and generalization over time i.e. follow up. The second limitation of the study was that it did not analyze the separate effectiveness of the individual components of the training package : the vidotape, rehearsal, and corrective feedback and praise. In the interest of developing a more economical training programme, it would be important to know the minimum necessary combination of training techniques that could not only produce acquisition of critical behaviour modification skills in the parent but also produce generalized skill in the parent so as to enable him/her to teach his/her mentally subnormal child ever new tasks without professional help. Practically stated, the question that needs to be answered is : which parent training technique is relatively more economic, efficient and least expensive in terms of professional time required vis-a-vis the immediate and long-term results from the patient's and his/her family's viewpoint.

Review of Literature In India

The problem of mental subnormalcy is increasing with the growth of the population, particularly in India wherein other factors such as illiteracy, superstitious, misconceptions about mental subnormalcy, lack of appropriate

services for mentally subnormals i.e. training institutions are prevalent side by side the major problem of 'population explosion'. The figures of incidence of M.R. in India is about 15 to 16 millions, prevalence rate 3% (Ray, 1976, p.1). Marriages of M.R. sometimes hiding the fact of mental subnormalcy at the precise moment of marriage, are still taking place, due to lack of information in public in general. The mentally subnormals should infact be sterilized to stop the average National I.Q. from sliding down (Singh & Kaushik, 1980).

Mental subnormalcy is not exclusively a medical problem. It is, in fact overwhelmingly an educational, psychological and social problem. "The "treatment" for the mentally subnormals is stimulation and education from the earliest possible moment to develop to the possible utmost, their limited potential. Mental ability grows when nourished by love, care and appropriate training. To check any further deterioration from neglect, the parents of mentally subnormals have to be incorporated in the training of mentally subnormals, especially the parents of young subnormal children since intelligence can be sharply affected in the environment of the child (even the mentally subnormal child) during the early childhood i.e. the first five formative years, is devoid of stimulation.

Despite the crucial need for improving the pathetic condition of the backward children through parental training, not much work appears to have been done in this area in India. The procedure that was used by the present investigator to survey in India was as follows : (i) letters were written to the various important mental health and training institutions, (ii) some of these institutions were visited, (iii) personally talked with other professionals, and the present investigator also attended the 'First Combined Asian Regional And Commonwealth Congress For the Scientific Study Of Mental Deficiency' held at Bangalore, India from May 4 to 8, 1981. The overall information gained regarding the state of service provided to the academically backward children in India could be summarized as follows : In most institutions/centres, the parental training of parents of the academically backward children is being done but by verbal means only and the format is didactic lecture addressed to a group of parents as a whole; the substance of these lectures was general, global, sometimes vague. Thus, in our child guidance clinic, the parents were either

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Names of institutions/centres are being purposely excluded here.

mentally retarded. The parents of mentally retarded children can form themselves into groups. These groups can meet and discuss the problems that come up to them and thus with their previous experience, guide the new cases to a fruitful solutions. The parents participation in services for mentally retarded thus plays an important role.

In the previous decade, the 'Federation for the Welfare of the Mentally Retarded (FWMR) In India, has brought out some service-oriented publications in the area of parental training (e.g., 'A Home Training Manual' by Mrs. Gool R. Flumber and 'A Special Issue has been published in Digest of FWMR for parents of Retarded persons - - Vol. VI-No.[illegible], 197[illegible]).

No work has been found reported, till date, in the area of parental training through operant procedures (behaviour modification) even on survey of the Indian Council Of Social Science Research (ICSSR) Abstracts.

As such, the present work, can perhaps be accepted as the first effort in India to carry out a scientific/research-oriented study of parental training techniques along the principles of behaviour modification, to train parents of [illegible]

The purpose of this investigation was to systematically evaluate the impact of various parental training

techniques on management skills of parents, and in turn behaviour changes in their [illegible] children and also to verify and replicate the findings of earlier work in this area in different culture, population and setting.

Chapter III

Method and Procedure

"Instead of studying a thousand rats for one hour each, or a hundred rats for ten hours each, the investigator is likely to study one rat for a thousand hours".

-B. F. Skinner, Operant Behavior.
In W.K. Hong (ed.) Operant
Behavior : Areas of Research and
Application. New York
Appleton - Century-Crofts,
1966, P. 21.

emotional and intellectual functioning. Based on these preliminary findings, the provisional diagnosis of was made by the psychiatrist and then the case was referred to the clinical psychologist for confirming the diagnosis through intelligence (IQ) testing and determination of child's level of functioning and future management. Wherefrom, the cases were referred to the present investigator who tested the IQs' of the testable children from the relevant performance intelligence tests such as 'Alexander's Pass Along Test,' 'Seguin Form Board Test' etc. For such children who were non-testable, 'Tredgold's Developmental Schedule' was used to obtain the developmental age level of the child. Also, the parents were interviewed to obtain relevant informations about the child's level of functioning and proforma (Appendix - 3) for each case was filled up for detailed analysis.

Each case of Subject referred to the present investigator by the Child Guidance Clinic of the Dept. of Psychiatry of B.H.U. was taken up except when the parents of the case living in the far off village expressed their inability to come regularly to the Child Guidance Clinic. Three mother-child pairs dropped out in the midst of the study because the families had change of jobs and moved out to distant cities, whereas one mother-child pair had to be dropped out from this Study because, at the time

of initial testing she was non-testable but vaguely rated as backward on Tredgold Development Schedule and hence included in the present Study but, later on when her hyperactivity reduced due to drugs prescribed from the Child Guidance Clinic Psychiatrist, she could perform Seguin Form Board and obtain a "Borderline" I.Q.

Sample Characteristics :

In the final stage, nine mother-child pairs participated in the present investigation. The primary focus of the Study was on teaching the mothers certain key behaviour modification skills, and to note changes in their and their childrens' specified target behaviours. The latter became the valid proof of the relevant skills acquired by the mothers

The mothers ranged in age from twenty-two years to fifty-two years and all had completed atleast a high school education. They all belonged to urban area and their socio-economic status was middle class. At the time of this study, the mothers did not have any knowledge and training in behaviour modification. These mothers were not randomly selecte they were the first nine mothers to express cooperation and eagerness to receive training but were randomly allotted to different time-lags as part of procedural requirement of multiple baseline design used in this Study.

Sessions

Three types of experimental sessions were conducted:

(i) child/subject training sessions.
(ii) parent/mother training sessions.
(iii) Observation/evaluation/recording sessions.

Mothers conducted the 'Child-training sessions' at their home for approximately 15 minutes once a day, seven days a week, at a fixed time, in each phase of this investigation. Only the mother and the child/subject were present in these sessions.

The 'parent/mother Training session' was held once in each phase by the investigator except for the baseline phase. The duration of 'parent/mother training session' was approximately 15 minutes. In this session, only the investigator and the mother-child pair were present. These sessions were held either at child's/subject's home or in the clinic i.e., for the study which was conducted at the home of the mother-child pair, the session was held at their home (mostly in the living room of the family), and for the cases where the venue was the clinic, the session was conducted in the office of the present investigator.

The 'Observation/evaluation/recording sessions' were the sessions in which data were collected - the other sessions being the intervention sessions. There were conducted three (consecutive) observation/evaluation/recording sessions in and towards the end of each phase including the baseline phase, either at the home or in the clinic according to the pre-fixed venue set for the given mother-child pair. The duration of each observation/evaluation session was approximately 15 minutes. The investigator serving as one of the observers, a second observer, the mother, and the child were the only persons present during the observation/evaluation sessions. However in some observation/evaluation sessions, a third observer was also present. The stop-clock, the recording data sheets and pen were used by the three observers to record the specified behaviours of the given mother-child/subject pair.

The Terms Used :-

The operational definitions of the five basic components of operant/behavioural engineering used in the present work are given below.[5]

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1. Discriminatory Stimulus ("S^D") :

The verbal instruction/command to the child issued after securing eye-contact with the child.

2. Prompts/Priming :

Physical/verbal help given to the child/subject to emit or start the desired child/subject target behaviour within five seconds of the delivery of S^D.

3. Shaping :

Shaping involves breaking the target behaviour down into a sequence of very small steps; to reward Successive approximations of the target behaviour until the child/subject finally responds correctly and completely. To earn a reward, each response must be at least as good an approximation as the previously rewarded response.

4. Consequences ($S^{R}+$) :

A pat on the child's/subject's back or cheek or hugging of the child/subject by the mother/investigator, smile, nodding, saying "Good" and "Very Good" etc., and giving a bite of biscuit given to the child/subject soon after the desired response.

5. A Trial :

A "trial" meant each small attempt of teaching the child, with a distinct beginning and a distinct end and some fixed inter trial interval of "no-training".

Definition Of The Term "Phase" :

A "phase" was defined (labelled) according to what happened in a given period of time while conducting the present investigation. Each phase of the study fulfilled some purpose of the design and the duration of every phase was governed by the design of the study. Any given phase, except for the 'Baseline' phase (M.O.M.) to be described separately, began with one mother training session of instruction or demonstration (as the case may be), followed by seven sessions of child training by the mother at home, and ended with three consecutive evaluation sessions. With implementation of each new intervention i.e., mother training technique, the ongoing phase changed.

The Baseline Phase/Mother's Own Method (M.O.M.) :-

In the beginning of this phase, the mother was simply instructed to teach the child/subject a specific task

using her own method, for seven days,[6] 15 minutes daily, following which (i.e., after seven days of mother training her child at home), three consecutive evaluation sessions were conducted, concluding the phase. There then, the next phase started i.e., 'The Phase of Specific Instruction'.

The Phase Of Specific Instruction :-

In this phase, a brief write up on necessary 'General Rules'[7] and clear specific instructions,[8] "tailored" to fit into the specific needs and deficits of the individual mother-child pair, geared at teaching the mother, the key behaviour modification skills namely : delivery of discriminatory stimulus (S^D), prompts, shaping, delivery of contingent reinforcing consequences ($S^{R}+$) and discrete trials, were written out, explained and given over to each mother for the specific child target task, were to be followed by the child's/subject's mother during the experimental phase

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In case of STUDY-2, the Baseline (M.O.M.) Phase was extended for some mother child pairs for 2 weeks, 3 weeks and 4 weeks (time lag) to ensure the multiple baseline design across mothers.

These 'General Rules' were reminded of to the mother at the start of each phase after the M.O.M.(Baseline phase).

called "Specific Instruction" phase for seven child training sessions (for seven days) at home, following which three evaluation sessions were held, thereby concluding the phase. The new phase namely; 'The Phase Of Specific Demonstration' began (if required) thereafter.

The Phase Of Specific Demonstration :-

The phase of Specific Demonstration consisted of one mother training session in the beginning of the phase involving a reminder to the mother of the "General Rules" and live specific demonstration by the investigator to show to the mother how to use behaviour modification skills e.g., delivering the correct S^D, prompt, shaping, rewarding the child/subject in a discrete trial. In fact, the specific Demonstration involved demonstration of the very same procedure of delivery of S^D, prompts, shaping, S^R+ and discrete trial as already described in the phase of Specific Instruction. Each Specific Demonstration phase involved one mother training session, consisting of five demonstration trials and lasted for 15 minutes. The mother used the demonstrated procedure at home during her 15-minute's 'Child training sessions' for seven

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. Specific Demonstration can not be shown except through videotapes which was not used in the present investigation.

days (seven sessions). The phase of Specific Demonstration concluded with three consecutive evaluation sessions after seven child-training sessions.

The Baseline Phase/Mother's Own Generalization Test (M.O.G.T.)

The phase of Baseline/'Mother's Own Generalization Test' (M.O.G.T.) was same as the Baseline phase (Mother's own Method i.e. M.O.M., as in this phase also the mother was not trained through any mother-training technique e.g., Specific Instruction or Specific Demonstration etc.) except for the purpose of this phase namely; to check/test whether or not the mother, after her 'Specific Training' in Experiment-I, could generalize to train/teach the child/subject new child target task. This phase consisted of simple verbal advice to the mother to teach the child/subject the new child target task for seven days involving seven session, each session of fifteen minutes daily. This phase also concluded after three evaluation sessions. However, in the case of STUDY-2, the Baseline/M.O.G.T. phase was extended (as the Baseline/M.O.M. phase) for some mother child pairs for 2 weeks, 3 weeks and 4 weeks (according to the time lag assigned to each mother-child pair) to ensure the multiple baseline design across mothers.

The Phase Of General Instruction Plus Specific Instruction (G.I.A.S.I.) :-

In this phase, the mother was reminded of the 'General Rules' (refer Footnote No.7, also Appendix 5) to be followed while training (as in 'Specific Instruction' and 'Specific Demonstration' phases) and 'General Instructions Plus Specific Instructions' (G.I.A.S.I.) geared at teaching the mother the basic general principles of behaviour modification i.e., delivery of discriminatory stimulus (S^D), prompts, shaping, contingent delivery of the reinforcing consequences and discrete trials were written, explained (through about 60 minutes lecture by the investigator) and given to the mother to be followed during the G.I.A.S.I. phase. The specific Instructions (i.e., the specific/concrete example for applying the general principles of behaviour modification) differed from one child target task to the other according to the child's level of skill. The question in this phase called "G.I.A.S.I." was to see if the Child's/subject's mother could assimilate within herself the general principles of behaviour modification so as to herself deduce specific behaviour modification programmes to train her child (the subject) in ever new target behaviours without

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any further help from the investigator/therapist i.e. professional. After the mother training session (consisting of 'G.I.A.S.I.'), the mother used the G.I.A.S.I. procedure at home for seven days, 15 minutes daily, teaching her child, the child target task, following which three evaluation sessions were conducted. Thereafter, the mother was assigned a new child target task and was merely asked to teach the child the given task for seven days. Following the seven child training sessions, three evaluation sessions were held to assess the mother's success in training the 2nd child target task following G.I.A.S.I. Next, the mother was given the third child target task and was asked to teach the task to her child in seven child training sessions. The mother taught the child for seven days and then the three evaluation sessions were held. If the mother was successful in training three consecutive child target tasks all by herself without (further) professional help, the study was terminated for that mother-child pair and the pair was put on follow up.

Definitions Of The Terms : 'Specifics Training' And 'Generalization Training' :-

The term 'Specifics Training' represented the parental training technique, whether instructional/didactic or live demonstration, illustrating the use of behaviour modification skills by giving concrete example involving one

child target task. However, under the term 'Generalization Training' the parental training technique explicated the general principles of behaviour modification skills in addition to giving about one (mother child pairs # 2 through # 9) or two (mother child pair # 1) illustrations of how the general principles could be used in specific cases of child target tasks.

The following terms have been used interchangeably in this study :

(i) Observation sessions/evaluation sessions/and recording sessions.
(ii) Parent/Mother training Session.
(iii) Child/Subject training sessions.
(iv) Target behaviours/tasks/skills.
(v) Observers/recorders.

These terms have been defined in relevant sections under the captions "Sessions"; "Target behaviours" and "Observation procedure".

PLAN OF STUDY

STUDY-1 Consisting : EXPERIMENT-I & EXPERIMENT-II
STUDY-2 Consisting : EXPERIMENT-I & EXPERIMENT-II

The overall 'Plan of Study' is concisely presented

in 'Chart No.1'. The present investigation, consisting of STUDY-1 (conducted on mother-child pair # 1), and STUDY-2 (conducted on mother-child pairs # 2 through # 9) was planned and conducted in step by step style, as is natural in an applied clinical research : questions emerging from Experiment-I of STUDY-1 dictated the planning of Experiment-II, the questions emerging from Experiment-II of STUDY-1, determined the planning of Experiment-I of STUDY-2, and the questions emerging from Experiment-I determined the designing of Experiment-II in STUDY-2.

The investigator manipulated three independent variables namely 'Specific Instruction (Intervention-1); 'Specific Demonstration' (Intervention-2); and 'General Instructions And Specific Instructions, abbreviated as G.I.A.S.I. (Intervention-3), to find out the useful behavioural technology which could produce not only acquisition, but (more importantly) generalization and also maintenance (through follow up) of behaviour modification skills learnt by mothers.

Although the titles Experiment-I and Experiment-II are given in STUDY-1, yet Experiment-I was extended upto Experiment-II, i.e., Experiment-II was part of Experiment-I. It was conducted in continuation to Experiment-I. STUDY-1, Experiment-I (Specifics training through Intervention-1 and 2)

was designed to teach the mother how to teach her subnormal child, the specific child target tasks. Experiment-II (Generalization training through Intervention-3) was designed to maximize the probability of generalization of skills acquired by the mother over different, new child target behaviours.

STUDY-2 was planned for and conducted to obtain generalization and also to ascertain i.e., to answer the research question, whether the generalization being produced was due to Intervention-3 namely General Instructions And Specific Instruction' or due to non-specific factors working overtime.

STUDY-1 : EXPERIMENT-I & EXPERIMENT-II

THE EXPERIMENT-I

METHOD

Sample

The participants of this Study were the Child/Subject, here called "S.A.", and the Child's mother, constituting the mother-child pair # 1. Their screening criteria and sample characteristics have been explicated under the main heading of 'Selection of Subjects' and 'Sample Characteristics' of the present Chapter III.

Sessions and Setting :

All the sessions i.e. 'Child training sessions', 'mother training' sessions and the 'observation sessions' in

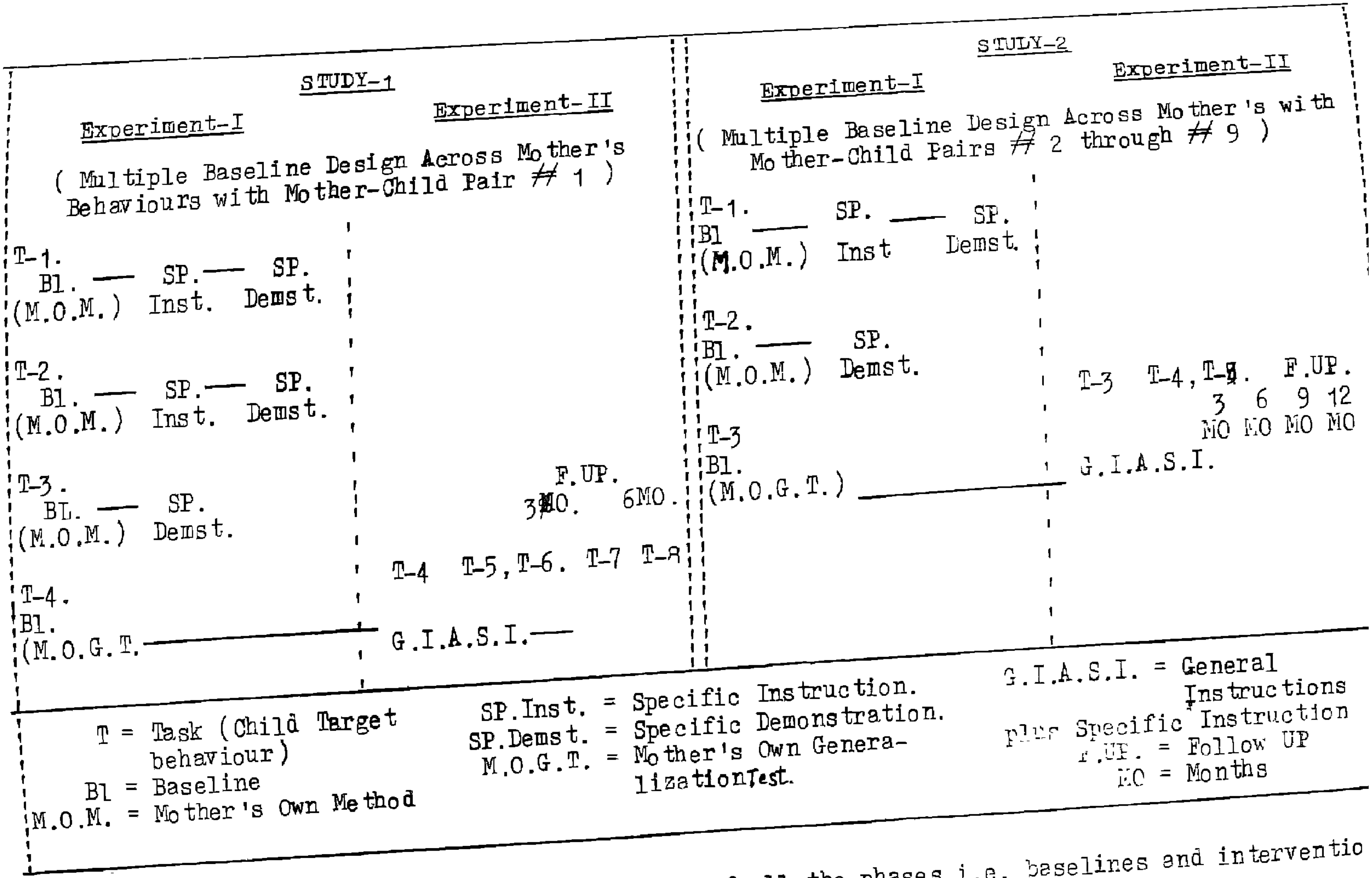

STUDY-1
Experiment-I
Experiment-II
(Multiple Baseline Design Across Mother's Behaviours with Mother-Child Pair # 1)
T-1. Bl. (M.O.M.) — SP. Inst. — SP. Demst.
T-2. Bl. (M.O.M.) — SP. Inst. — SP. Demst.
T-3. BL. (M.O.M.) — SP. Demst.
T-4. Bl. (M.O.G.T.
G.I.A.S.I.
T-4
T-5, T-6.
T-7
T-8
F. UP.
3 MO.
6MO.
STUDY-2
Experiment-I
Experiment-II
(Multiple Baseline Design Across Mother's with Mother-Child Pairs # 2 through # 9)
T-1. Bl (M.O.M.) — SP. Inst — SP. Demst.
T-2. Bl. (M.O.M.) — SP. Demst.
T-3 Bl. (M.O.G.T.)
T-3
T-4, T-5.
G.I.A.S.I.
F.UP.
3 MO
6 MO
9 MO
12 MO
T = Task (Child Target behaviour)
Bl = Baseline
M.O.M. = Mother's Own Method
SP.Inst. = Specific Instruction.
SP.Demst. = Specific Demonstration.
M.O.G.T. = Mother's Own Generalization Test.
G.I.A.S.I. = General Instructions plus Specific Instruction
F.UP. = Follow UP
MO = Months

Chart-1. A simple 'flow-chart' showing the names of all the phases i.e. baselines and interventio in their proper sequence without the time lag feature.

the case of mother-child pair # 1, receiving the sessions at their home, were conducted in the living room of the family.

The investigator who also served as one of the observers, a second observer, the mother and the child were the only ones present during observation sessions. However, in some of these sessions, a third observer was also present. During the 'mother-training session', the investigator, the mother and the child were the only. ones present. The 'Child-training sessions' were conducted by the mother daily, about 15 minutes per session, seven days a week, and only the mother and the child were present at the place of training. Whenever for some unforseen, sudden reason, the mother could not hold a child-training session, that day was regarded "zero" and the on-going phase continued until the seven child-training sessions were not completed by the mother.

Design

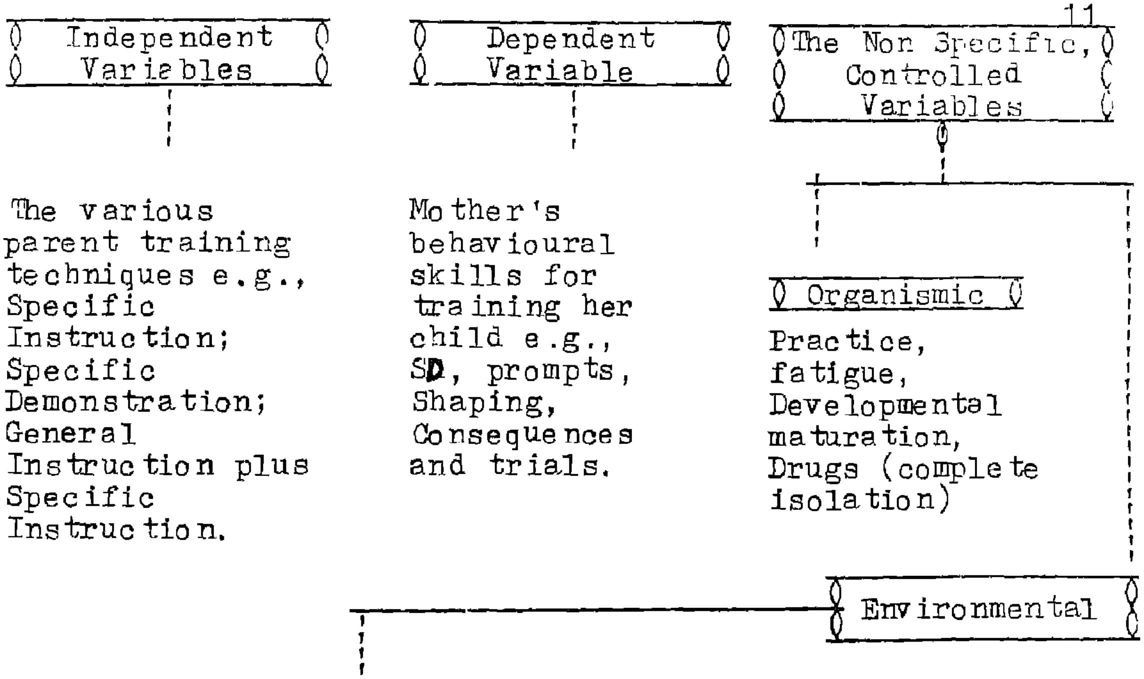
The experimental design used in Study-1, with mother-child pair # 1, was the one befitting the single case design in clinical setting, namely multiple-baseline design (Baer et al., 1968; Hersen & Barlow, 1976; Risley & Baer, 1973) with time lags across behaviours. *Since the effects of training procedures for the trainees (mothers)*

may not reverse readily, it is more appropriate to use a multiple baseline design (Baer et.al., 1968) *instead of "Reversal Design"*. The time lags were used not only for experimental intervention on mother's but also the child's target behaviours; the specific child target behaviour was kept constant while the time lags were being used in the context of the mother's behavioural repertoire. Moreover, to check for the *order effect* favouring one training technique over the other, the order of implementation of different parent training techniques was reversed in the context of one of the child target task. Tests of two types of generalization : Regarding mother's ability to generalize the acquired skills *across different stimulus situations*, that is, the new as-yet-untrained child target behaviours; and *over time*, that is, retention through follow up time period was done at three months and six months intervals.

The Variables :

The following diagram displays the various variables in the present work.

The Variables



Independent Variables

The various parent training techniques e.g., Specific Instruction; Specific Demonstration; General Instruction plus Specific Instruction.

Dependent Variable

Mother's behavioural skills for training her child e.g., SD, prompts, Shaping, Consequences and trials.

The Non Specific, Controlled Variables[11]

Organismic

Practice, fatigue, Developmental maturation, Drugs (complete isolation)

Environmental

The mothers in the present work came from middle socio economic group and were at least high school pass.

Procedure of data collection : observation and recording, evaluation of results was held constant for each case and phases throughout the study.

Definition of behaviours (mother's and child's target tasks) remained constant.

Criterion of mastery for each target task was fixed prior to the begining of each phase of the study.

Serial effect of sessions and other unknown factors working over time were automatically controlled by the design of the study.

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11. The multiple-baseline design enables experimental control over non-specific variables.

Independent Variables (I.V.) :

In the present study an experimental analysis of various parent training techniques was undertaken without any apriori hypothesis (refer to footnote No.2 Ch.1) to find out the functional relationship between the independent variable and the dependent variable. In this hypothesis-free study, the original plan was to go further step by step along the 'flow chart' (refer Appendix No. 1) until the target of study for each mother-child pair i.e. generalization of mother's behaviour modification skills across three new child target tasks was not achieved. However, the need did not arise to go beyond the third parent training technique/method. The three parent training techniques which served as independent variables in the present study were as follows:

1. Specific Instruction
2. Specific Demonstration
3. General Instruction plus Specific Instruction.

Dependent Variable (D.V.) :

The dependent variable in the study was mother's skills/practices of training her mentally subnormal child. Five aspects of mother's behaviour were selected :

1. S^D (Mother's verbal instruction to the child).
2. Prompts (Mother's physical help to the child).

3. Shaping (Correct reinforcement of child's successively correct approximations to the child target behaviour).
4. Reinforcing consequences.
5. Discrete Trials.

Non-Specific Variables :

The mother-child pair remained the same throughout the study, thus various non-specific orgamismic variables across phases were controlled. Moreover, the time lag feature of 'multiple baseline design' took care of such non-specific variables as 'practice'.[12]

All the mothers in this study were educated i.e. not below high school level, and were of middle class socio-economic status.

The drug intake of each child was controlled by stopping the drug such as Glutaneurole or Encephabol if the child/subject was already taking it.

Procedure of data collection, observers, definitions of behaviours, criterion of mastery, reliability etc. were pre-determined and were held constant through-out the study.

In the present investigation a research strategy called the 'multiple-baseline design' across behaviours and across mothers' was employed. This design is one of the newly invented small sample experimental design. In fact, apart from socially useful contributions of behaviour modification approach, the emergence of these newer experimental designs based on experimental (rather than statistical) controls inherent in the notion of manipulation has been a yet another important contribution. The Multiple Baseline Designs score high on internal validity, because the use of few subjects allows the experiment (under controlled conditions) to continue for as long as required i.e. until a powerful independent variable effective enough as to clearly produce noticeable change in the dependent variable with demonstrable functional relationship between the independent and the dependent variable is not discovered.

By repeated replications of the observations on the same case, the non-specific/extraneous/unknown variables such as history, developmental maturation, repitive practice i.e. serial effects of sessions, fatigue and other unknown factors working overtime and organismic uniqueness etc. are automatically controlled by the time lag feature of multiple baseline design and the functional relationship is established as against few observations on many cases in factorial multigroup designs. Thus, the experimenter achieves an analysis

of behaviour in terms of demonstrably known variable responsible for changes in the dependent variable i.e. the experimenter demonstrates that he/she has a reliable experimental control, in that each behaviour (dependent variable) changes maximally only when the experimental variable is applied to it at different points in time.

It is the uniqueness/beauty of multiple-baseline design that it promotes simultaneous measurement of several concurrent target behaviours, that certain threats to internal validity such as history, maturation, testing, instrumentation and reactive interventions are automatically ruled out through the in-built features of this newer experimental design. A fuller elaboration of how these extraneous sources of interference are controlled by means of the time lag feature of multiple baseline design is presented in the chapter on Discussion.

Procedure

A list of eight child target tasks/behaviours was identified with the help of the mother. The tasks were simple, deemed by the mother to be of functional utility to the Child, and not previously present in the child's behavioural repertoire. The eight child target tasks were : the wearing of underpant, verbal language training, following command,

Reliability data for each behaviour (rather than averaged across behaviours) was obtained during 100. [illegible] observation sessions for child and mother target tasks. The procedure for calculating interobserver reliability in Experiment-II, STUDY-1 was essentially the same as in Experiment-I, STUDY-1. Also, the same procedure was adopted for recording child's response/target behaviour as explicated in Experiment-I, STUDY-1.

STUDY-2 : EXPERIMENT-I & EXPERIMENT-II

The primary purpose of STUDY-2 was to replicate and confirm the basic findings of STUDY-1 (with mother-child pair # 1) by means of STUDY-2 using multiple baseline design across mothers involving mother-child pairs # 2 through 9.

THE EXPERIMENT-I (STUDY-2)

METHOD

Sample

Eight mother-child pairs participated in the STUDY-2. The procedure for selection of mentally subnormal children/subjects and their mothers, the screening criteria, selection of child target tasks for each mother-child pair was essentially the same as in STUDY-1. These procedures, the setting,

and the descriptive characteristics (demographic data) of each mother-child pair have been described in detail under the main heading of 'Selection of Subjects': 'Child Target Tasks'; 'Sample Characteristics' and 'Setting' at the beginning of the present (ongoing) Chapter III.

Design

The experimental design used in STUDY-2, with mother-child pairs # 2 through 9, was multiple-baseline design across mothers', with sequential time lags of one, two, three and four weeks (i.e. seven, fourteen, twentyone and twenty-eight days). The assignment of these time lags was randomly done before the training began on each mother-child pair. This design was used to assess whether the acquisition and generalization of skills acquired by mothers by means of the different parent training techniques was due to the experimental intervention or due to some non-specific factors working through sheer passage of time.

The experimental/independent variables were the various parental training techniques namely (i) Specific instruction; (ii) Specific Demonstration and (iii) General Instruction plus Specific Instruction. The dependent variables were the essential operant skills used by mothers for training their mentally subnormal child.

Further, as in Experiment-I of STUDY-1 to control for possible order effect favouring one training technique over the other, the order of implementation of parent training techniques was reversed[22] in the context of one child target task with three mother-child pairs.

A summary of the design depicting the phases has been presented in Chart-1 as 'The Overall Plan Of Study'.

In Experiment-II of STUDY-2 which was an extension of Experiment-I, tests of mother's skill to generalize the acquired skills across different child target tasks & generalization over time i.e. maintenance/retention of behaviour modification skills learnt by mothers during follow up were conducted.

Procedure (Experiment-I of STUDY-2)

Five behaviours of mothers were selected as "mother target behaviours" for observation and manipulation on the basis of the findings of STUDY-1 and review of literature. These five behavioural categories/targets (dependent variables),

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[22] ~~The basic idea here was to introduce the well known "Intra Subject Reversal Design" and~~ The phases of 'Specific Instruction' and 'Specific Demonstration' were reversed for mother-child pairs # 2, # 3 and # 5. However, the mothers acquired the behavioural skill concerned just when 'Specific Demonstration' technique was used and the opportunity and need did not arise for "Reversal".

selected, were : (1) The use of discrete trials (2) Presentation of discriminatory stimulus (S^D) (3) Use of Prompts (4) Use of Shaping and (5) Use of contingent reinforcing consequences (S^R+).

Two parent training techniques studied in Experiment-I were 'Specific Instruction' and 'Specific Demonstration'.

The list of child target tasks for mother-child pairs # 2 through # 5 in STUDY-2 is presented in Table No.-3 and the list of child target tasks for mother-child pairs # 6 through # 9 in STUDY-2 is presented in Table No.4.

Procedural Details

Three informal observation sessions, with three observers present, were conducted before formal baseline observation sessions were begun to allow each mother and the child become familiar and comfortable with each others' presence.

Sessions

As in STUDY-1, the sessions in STUDY-2 were also of three kinds namely, (i) 'Child Training Sessions' each of 15 minutes conducted by each mother at her home everyday for seven days corresponding to seven sessions. During these

Chapter IV

Results

" Fundamental progress has to do with the reinterpretation of basic ideas".

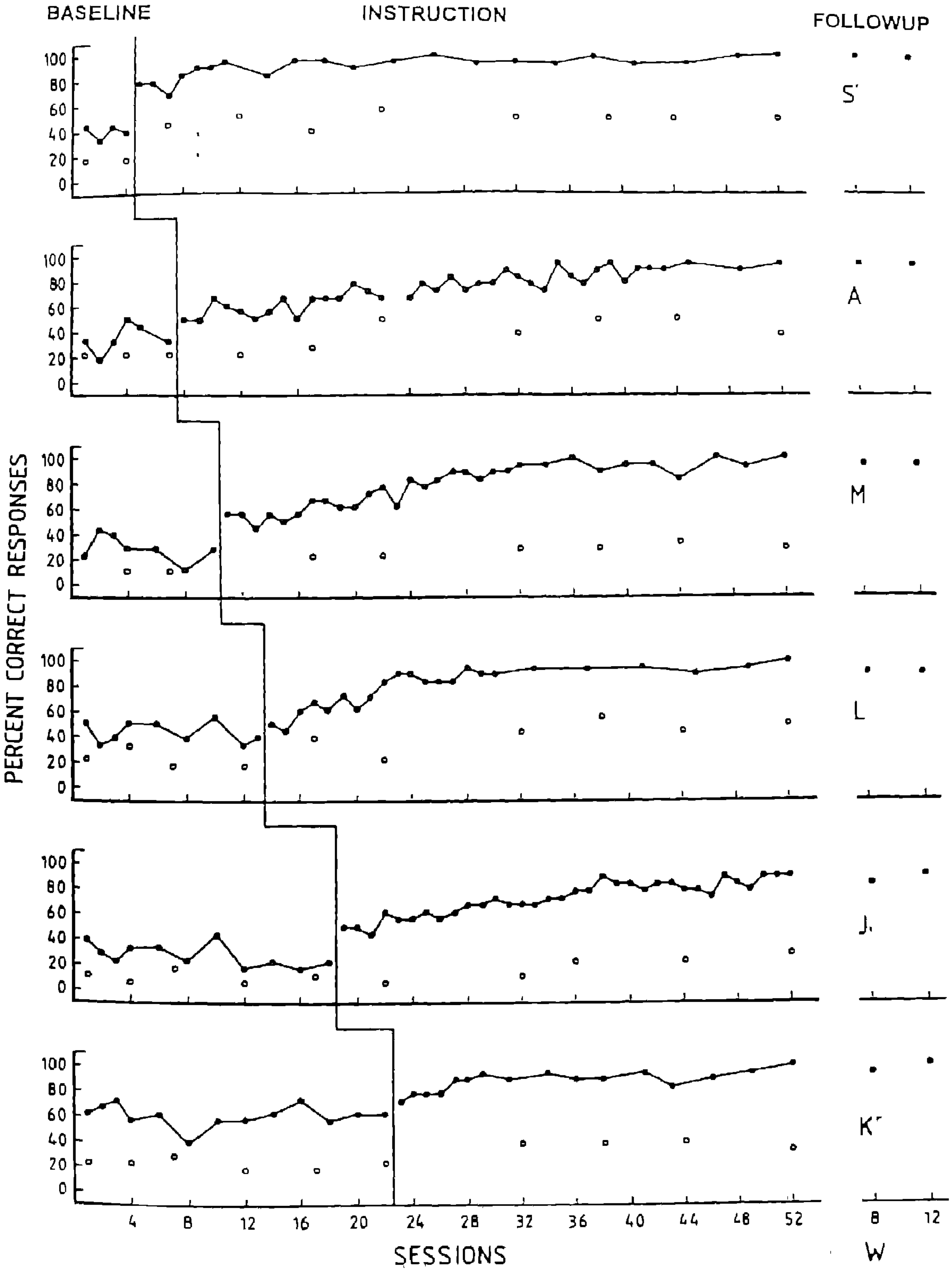
-A. N. Whitehead

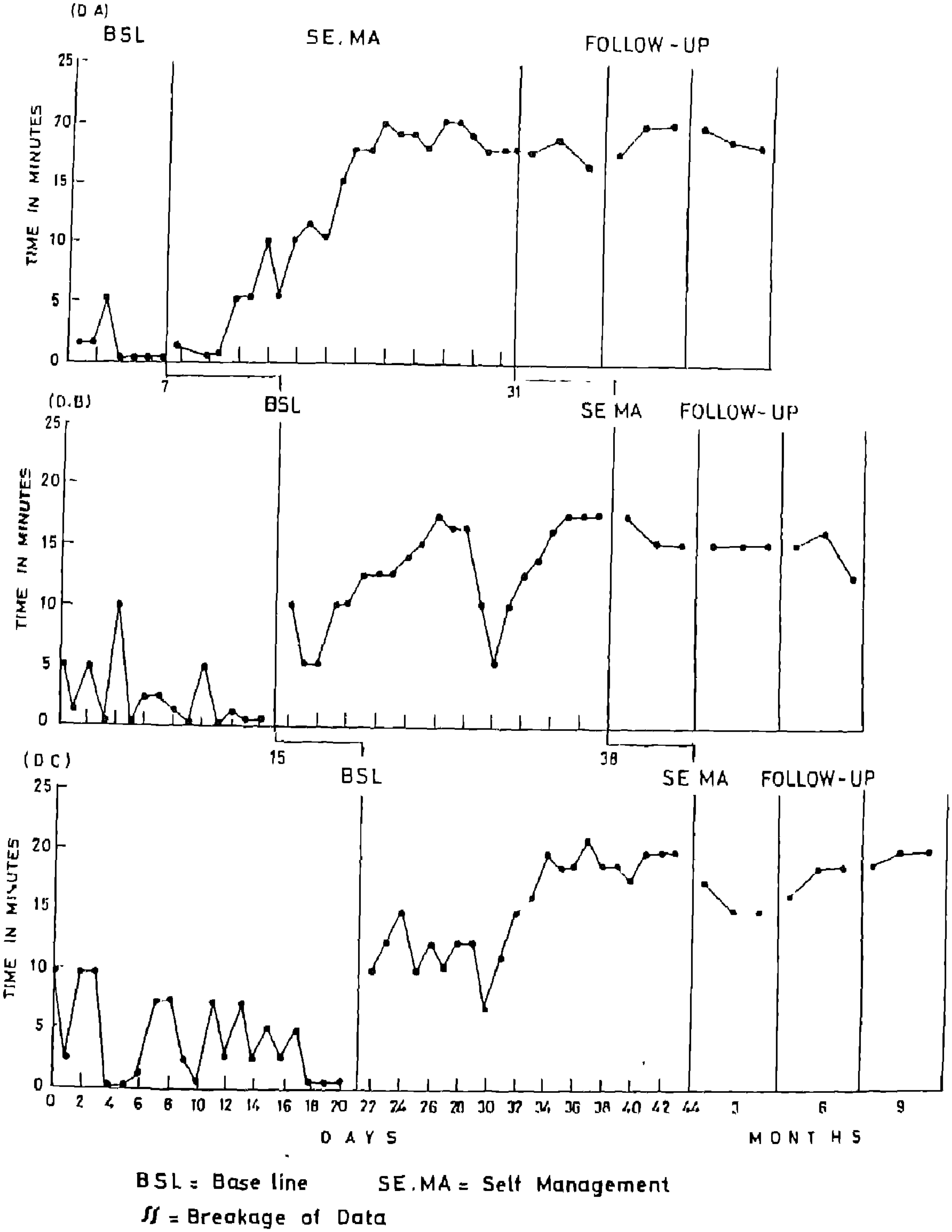
A NEGATIVE

SONU...
How'd you do on your math Problems?

Here it is

You missed five out of ten? What happened?
I don't know.


BASELINE
INSTRUCTION
FOLLOWUP
PERCENT CORRECT RESPONSES
100
80
60
40
20
0
S'
A
M
L
J.
K'
4
8
12
16
20
24
28
32
36
40
44
48
52
SESSIONS
8
12
W


(D A)
BSL
SE. MA
FOLLOW - UP
TIME IN MINUTES
25
20
15
10
5
0
7
31
(D.B)
BSL
SE MA
FOLLOW- UP
15
38
(D C)
BSL
SE MA
FOLLOW-UP
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
3
6
9
D A Y S
M O N T H S
BSL = Base line
SE.MA = Self Management
ʃʃ = Breakage of Data

Chapter V

Discussion

" Generalization should be programmed, rather than expected or lamented".

- D. M. Baer, M. M. Wolf and
T. R. Risley , Journal of Applied
Behavior Analysis, 1968, 1, P. 97.

Summary. In summary, the results of both studies (STUDY-1 & STUDY-2) clearly demonstrated that verbal 'Instructions', even if specific, were not effective in training the mothers. Live 'Demonstration' (modeling) procedure of parent training was effective with respect to the *initial acquisition* of the operant skills in behaviour modification for teaching specific child target tasks. However, there was essentially no generalization of skills in the mothers to new child target tasks. The parent training technique, here called, 'General Instructions And Specific Instruction' (G.I.A.S.I.) was effective in *generating* generalized skill in the mothers, whereby they could transfer the behaviour modification skills effective across multiple child target tasks and across time in follow ups.

x x x x x x

DISCUSSION

The results of the present investigation consisting of STUDY-1 and STUDY-2 are shown through Figures 1, 2, 3 and 4 (in STUDY-1) and Figures-5 and 6 (in STUDY-2) instead of tables using statistical calculations because each step of statistics takes us away from the (original) raw data. The

treatment of data for projection and semilog charting such as celeration index, were considered in this investigation [illegible] not created because in experimental, rather than statistical control, the functional relationship is obvious without statistics, as it was in the case of the data of this work. Thus, the need for semilog charting and also using statistics (Rn), to demonstrate . . . . 'effect' did not arise (e.g., Kazdin in Hersen & Barlow, 1976, p.266 and 310-311; Michael, 1974). Moreover, the present work meets the criterion of 'operant research' which propagates that nearer the raw data, more is the trustworthyness of conclusions.

The results of STUDY-1 and STUDY-2 (Experiment-I: Specific training) on the basis of experimental analysis of behaviour modification skills of mothers, using multiple baseline design, reveal that 'Specific Demonstration' (also called 'modeling') is an effective technique of parent training. This finding is in accordance with other similar findings (e.g., Gladstone & Sherman, 1975; Koegel et.al., 1978, Ringer, 1973; Wetzel, 1970). Infact, in the context of non-retardates also, modeling or live demonstration has often been used as one of the several components of behavioural training programmes for psychotherapists (e.g., Finney, 1968; Strupp & Jenkins, 1963), but analysis of its independent effect on Specific trainee responses has received little attention.

The present investigation replicates and corroborates the findings of earlier studies [illegible] verbal/didactic instructions are not at all needed in training parents, and that specific demonstration alone is effective in teaching mothers). Where in [illegible] data have been presented suggesting relationships between parent characteristics (types of parents) and successful parent training, e.g., Salzinger et.al., (1970) reported parent success relating to *educational level*, *intelligence* and particularly *reading ability*. Training was based primarily on *verbal learning* of behavioural principles. Patterson et.al.. (1972) found training some uneducated lower-socio-economic parents to be difficult because of their lack of even the most rudimentary child management skills and low availability of reinforcers. These studies were based on *Verbal* instructions (Programmed Instructional Texts etc.).

However, other authors (Hirsch & Walder, 1969; Mira, 1970) have not found a relationship between *parent's education*, *intelligence* or *socio-economic level* and *training success*. These studies *emphasized direct* teaching of parent behaviours and *minimized verbal* learning. To corroborate this finding, two tentative conclusions have been drawn by O'Dell (1974) in his review article on parent training, about the effect of parent characteristics on training :
(1) Verbal learning approaches sometimes necessitate more

highly educated parents. (2) Programmes that emphasise actual behavioural learning and individually tailored programmes are able to produce desired results in a wider range of parents.

Corroboration of O'Dell's (1974) these points is found in a study conducted by Mira (1970), who reported that in 82 cases, individual treatment required 2.1 hours of professional time to achieve modification, whereas group treatment averaged 3.9 hours per parent.

Thus, direct modification, in "one to one" framework, as has been used in the present investigation, is the most effective training approach. In this approach i.e. Specific Demonstration, (unlike didactic approach, wherein the parent's high educational level becomes a relevent necessity), the parent observes the trainer/professional teaching the child/subject.

x x x x x x

The Design

In the present investigation, a research strategy called the 'multiple baseline design' was employed. This design is one of the newly invented small sample experimental designs. In fact, apart from the clinically and socially useful contributions of behaviour modification movement, the emergence of these newer experimental designs based on

experimental rather than statistical controls ([illegible] [illegible], p. 115-116). Inherent in the notion of "single [illegible] [illegible]" [illegible] yet another important contribution [illegible] the ([illegible] [illegible]fication) movement. These experimental designs, [illegible] little known, have many advantages over the [illegible] [illegible] "outcome type" experimental designs : they are inclined towards ideographic approach, are intensive (rather than extensive), as such they score high on internal validity (Kazdin, 1975, 1976; Wolpe, 1977).

The use of few subjects in these designs makes it feasible for experiment (under highly controlled conditions) to continue for as long as necessary i.e., until [illegible] [illegible] independent variable, enough effective to produce clinically noticeable changes in the dependent variable, with demonstrable functional relationship between the independent and the dependent variable, is not discovered, after ruling out the effect of extraneous variables. By repeated replications of the observations on the same case, the non-specific/extraneous variables, that pose threat to internal validity, such as sheer passage of time, history, developmental maturation, organismic uniqueness, repetitive practice, i.e., serial effects of sessions, fatigue and other unknown factors working overtime are automatically controlled by multiple baseline design and the functional relationship is established. These advantages are relatively missing in the case of [illegible]

observations on many cases in factorial multi-group [illegible]. The traditional multi-group or two-group designs [illegible] outcome designs, are rigid in structure. The newer multiple and reversal designs, born out of Behaviour Modification research, being applied research, are flexible (unlike close-structured multi-group design) and directed at exploring by repeated trial and error, some behavioural intervention, which is at last effective in producing a change and to establish that change, thus produced, is not due to uncontrolled non-specific factors.

The advantages and relative merits of single subject designs vis-a-vis two and/or multi group designs have been adequately covered elsewhere (Campbell & Stanley, 1963; Chassan, 1967; and Sidman, 1960).

In the present investigation, it has been repeatedly demonstrated through STUDY-1 and STUDY-2 that the change in the level of mother's behaviour comes only when training through 'Specific Demonstration' is given and not due to non-specific factors working over time of the various time-lagged baselines.

At first, in STUDY-1 (Experiment-I), which used multiple baseline design across behaviours, three of the mother's target behaviours were identified and measured over time to provide baselines against which changes could be

evaluated. With these baselines established, the investigator then applied the intervention (e.g., Specific Instruction) to one of the mother's behaviours (use of [illegible] stimulus (S^I) in the context of child-target tasks. [illegible] no or little change in the level of mother's behaviour, the investigator then applied the intervention-2 (namely, Specific Demonstration), produced a change in the level of mother's target behaviour, but noted little or no change in the other baselines running parallel in time series. These baselines served as "Controls" against which change in the level of mother's target behaviour could be compared.

Further, rather than reversing the just produced change, the investigator instead, applied the experimental variable to one of the other, as yet unchanged responses. while recording continued on all the responses/behaviours as before. Thus, this experimental design meets the prescribed two cannons of Bacon's inductive logic necessary to establish a functional relationship between variables C and E namely "where there is C there is E" and also "where there is no C, there is no E", therefore, C is related to the occurrence of E (Mill cited in Townsend, 1953, pp.90-91).

The above mentioned are the two essential foundation stones of basic scientific research (Townsend, 1953, p.90-91). The design used in the present work, based on the above mentioned foundations is "empirico-inductive" instead

of "hypothetico-deductive" (Bijou, 1970, p.65; [illegible], p.91-93; 1972, p.112). To be specific, when the 'Specific Demonstration' procedure was used as the parent training procedure, there was directly noticed the desired change in the mother target behaviours (validated by the corresponding changes in the child's behaviours i.e., child target behaviours), and when the 'Specific Demonstration' procedure was not used, there was no or almost no change noticed in the mother target behaviours as repeatedly evidenced by various time lagged multiple baselines.

The same, above-mentioned rationale of "empirico-inductive" logic also applies to STUDY-2 in the evaluation of effectiveness of G.I.A.S.I procedure of parent training in relation to the emergence of generalized set of behaviour modification skills in mothers where again the time lagged multiple baseline design but (this time) across mothers was used. Application of the multiple-baseline design across "N" (subjects) mothers (in the present investigation) has several unique considerations relative to the design's application within subjects. It allows stronger inference for experimental control since sequential introduction of interventions helps eliminate historical invalidating influences (cf. Kazdin & Kopel, 1975). Successful demonstration of an intervention across subjects (across mothers in STUDY-2) also helps to establish the external (direct) validity of the present research results.

The logic of the design requires that the [illegible] tion will affect each unit [illegible] similar [illegible] obtain this, the investigator [illegible] that the [illegible] do not communicate with each other [illegible] procedures, intent of the study, and [illegible] features [illegible] would likely influence baseline stability and this [illegible] care of by giving widely separated appointments to [illegible] this investigation coming to the clinic.

Some writers have noted that inference may be weaker in the multiple baseline design than in within-subject replications as occur in the ABAB design(Hersen & Barlow, 1976) since replications occur on different rather than the same experimental units. Another consideration relates to the number of replications necessary to document experimental control. Hersen and Barlow (1976), recommend a minimum of three to four replications across behaviours or subjects. Moreover, in the clinical settings where the change is socially welcome and long wished for, the use of ABAB design to produce planned reversal or even decrement in the clinically desirable change becomes un-ethical, which no hospital authority nor any mother of mentally subnormal will allow.

In the present investigation the following concerns and considerations, in keeping with the suggestions of Kazdin and Kopel (1975), have been taken care of : (1) behaviours for baseline observations, that were chosen, were as

independent as possible.. ([illegible] three baselines (in S[illegible]) and four baselines (in STUDY-[illegible]) were used rather than [illegible]. It was not possible/feasible to [illegible] withdrawal of the intervention ([illegible]) ethical [illegible].

Perhaps the major point made by these [illegible] is that training programmes (aiming to teach specific [illegible] target tasks) can produce differential improvement in [illegible] teaching skills and in the behaviour of targeted children (cf. Bandura, 1969, 1976; Koegel and Rincover, 1977). For example, as explicated in STUDY-1 Experiment-I, some components of training may result in changes in some of the mother's behaviour e.g., the use of discriminatory [illegible] (S^D), yet this change may not produce change in the mother's ~~bxkx~~ other behaviours necessary to change a child's behaviour. To obtain change in child's behaviour, all the component skills of behavioural training are required. Similarly, even if the mother's behaviour changes and this change results in the mother's ability to change a child's behaviour, this still may not mean that the mother would work effectively with other child behaviours i.e. generalize (transfer) her behaviour modification skills across other (un-trained) child target behaviours. In essence, it can be said that parent training programmes may have either very limited or very broad results depending on how specific or how general is the training package. In fact, "Generalization should be programmed rather than expected or lamented" (Baer et al., 1968). None of the earlier studies (except one or two e.g.,

by Koegel, *et.al.*, 1978), provided measures of generalized performance in parents as a result of parental training. To develop a successful treatment programme, one must be concerned with at least *three* major results : first, *the initial acquisition of a behavioural change*; second, *the generalization of that change to settings outside the treatment, and* third, *the maintenance to change over time* in settings outside treatment (Baer, et.al., 1968; Bandura, 1969, 1976). Generalization of trainee skills could also be demonstrated by showing that after training was completed, the trainee/mother could : teach the same child/subject *different responses* i.e., generalization of skills to the different child target behaviours. Thus, *generalization* and *maintenance do not occur naturally*, as shown in *STUDY-1*, but *have to be programmed* as shown *in STUDY-2* of the present work of applied research.

Generalization Training :-

The overriding useful parent training technique that emerges from this whole work is the, '*General Instructions And Specific Instructions*' (G.I.A.S.I.). With the help of training through this parent training technique, the mothers not only understood the vital *general* principles of behaviour modification, but could also make programmes and teach successive child target tasks successfully to their child, and also retain their skills over time i.e., follow up.

Thus, this study evaluated and general- [illegible] that the mothers' developed (G.I. [illegible] [illegible] new child target behaviours over time. The [illegible] major finding has great potential in the [illegible] technology of behaviour modification in training [illegible] subnormals whereby professional's time and public [illegible] establishing homes and institutions for mentally [illegible] (IR) is saved because the treatment can be carried out in natural environment by the most familier and natural person in the child's surroundings i.e., mother, who can be made to become a full therapist/engineer and can train any new tasks to her child when trained by means of 'General Instructions And Specific Instructions' (G.I.A.S.I.) procedure of parental training. Thus, the gain to subnormal child and his/her family is much more than if it had been in direct intervention by the professional. In the interest of developing a more economical parent training programme, the present investigation was undertaken to find out the minimum necessary (ingredients) combination of parent training techniques that could not only produce acquisition of critical behaviour modification skills in the parent, but also produce generalized skill in the mother so as to enable her to teach her mentally subnormal child ever new child target tasks without further professional help.

The overall findings of this study sugg[illegible]

General Instructions And Specific T[illegible]

[illegible] present training technique involving t[illegible]

vital/critical principles of behaviour modification [illegible]

[illegible] give to generate generalization (transfer) [illegible]

tasks. The findings of this study are in accord [illegible]

the findings of the study conducted by Katona (cited in Crafts, Schneirla, Robinson & Gilbert, 1950, pp.31[illegible]) in the area of basic research in retention and transfer. Katona (ref. Crafts et.al., 1950, p.312-315), using "card-trick" experiments, also showed that transfer of memorized solutions is better when the subjects cultivate an understanding of general principles involved, rather than when the subjects learn only one or two specific solutions. Thus in the present study, mothers' learning to train their child in one or two specific child target tasks did not lead to generalization across different, new tasks. But when the same mothers had picked up the general principles by means of G.I.A.S.I., they could make specific programmes **and** effectively and successfully train their child in new child target tasks.

x x x x x x

Conclusions

To sum up, the conclusions arrived at, on the basis of the findings of the present investigation are as follows :

(i) Verbal instructions, even if specific, were not [illegible] achieve as effective as [illegible]specific factors. [It may be argued that if more explicit [illegible] had been established with mothers, explaining various [illegible] them, citing complex animal psychology experiments [illegible] discrimination learning, they may have picked up behaviour modification skills even at the "Instruction" stage! The answer to this question could be 'yes' – it might have been so – but the same was not done in the present study as the aim of the present work was to find cheaper, simpler and less time-consuming technology of parent training and-yet, teaching discrimination learning of animals might not have been effective on mothers who were not psychology graduates].

(ii) 'Specific Demonstration' technique of parent training leads to acquisition of specific child target task i.e., the parent training technique namely 'Specific Demonstration' was effective with respect to the initial acquisition of the operant skills in behaviour modification for teaching specific child target tasks. However, there was essentially no generalization of skills in the trained mothers to new child target tasks. Brief 'Demonstration' to the mother was required each time, for every child target task, before the mother could teach her child the target task.

(iii) The parent training technique, so called, 'General Instructions And Specific Instructions' (G.I.A.S.I.) was effective for teaching not just the behaviour management skills to mothers and specific child target behaviours to children but also, more importantly, the generalization of skills, effective in teaching multiple child target tasks and in maintenance of generalized skill over time. Thus, acquisition of general principles of behaviour modification produced more transfer than was yielded by acquisition of specific skills i.e., with the help of training through general principles, the mothers could make specific programmes and teach their subnormal child independently without professional's help. Thus, general principles are perhaps the most important of all acquisitions from the viewpoint of transfer. The results of the present investigation (Figures 5 & 6 in STUDY-2) show the same trend of data i.e., in both set of mothers, whether trained at clinic or in their homes, the similar findings were observed, that is, the parent training technique namely, 'General Instructions And Specific Instructions' (G.I.A.S.I.) was effective in generating generalized skill in the mothers whereby they could transfer the behaviour modification skills effective across multiple child target tasks and across time in follow ups.

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"The future destiny of the child is always the work of the mother".

-Napoleon

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